Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves

PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY, MONADNOCK BLOCK, CHICAGO

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CHICAGO, NOVEMBER 30, 1912

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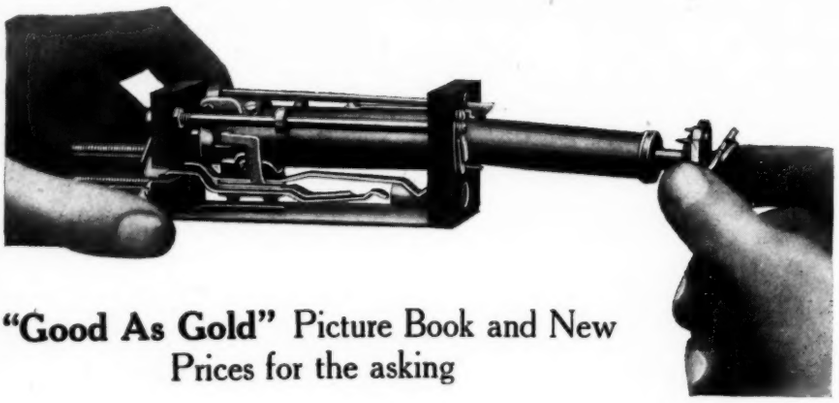

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THE MAN IN THE RANKS.

The man with the big opportunity today is the man in the ranks. There are others in this world besides ourselves, and some of them are active. The man who climbs up is the one who is not content with doing only just what is absolutely necessary, but who does more.—James J. Hill.

Holding Subscribers Who Order Telephones Removed.

Subscribers who order their telephones removed have various reasons for their action, and in many instances, if these reasons are ascertained, the subscriber may be persuaded to reconsider his decision about discontinuance of the service. The contract agent of the company, when an order for removal is received, should familiarize himself with the conditions of the service furnished, so that he can talk intelligently with the subscriber regarding it in an effort to hold the customer. If a telephone company has several grades of service, they may be suggested as a possible compromise in case of a desire to cut expenses, being the reason for the removal order.

The agent should never give up or permit himself to become discouraged in his efforts to prevent the loss of a subscriber. He should bring out all of the points which make a telephone so essential in every day life. The use of tact, civility and politeness will accomplish much toward retaining the subscriber. Possibly the subscriber has a grievance on account of the service furnished him or some fancied wrong. If a personal interest is taken in the matter, the cause of his grievance may be found out and, in all probability, it can be explained in such a manner as to win back the aggrieved one.

If the person who deals with the subscriber has the ability of explaining clearly conditions which may have produced the trouble, combined with much sound sense and good judgment, he will in many cases be able to satisfy the subscriber. The exercise of good judgment in knowing when to speak and when to listen, coupled with the ability to score effectively in telling of the company's good points, will do much toward overcoming the subscriber's ill will.

After persuading a subscriber to retain his telephone, the interest in him should not cease. He should be called upon either personally or by telephone frequently, so that he will have the feeling that the company takes a real personal interest in him and desires to furnish him the best of service.

It is always worth while to hold a subscriber, as a good subscriber retained is more of a recommendation for the company than a new subscriber secured, when the matter of expense is considered.

One secret of the success of many firms is their ability to retain the patronage of old customers. Telephone managers many times regard complaints of customers as trivial and small and hence make no investigation of them whatever. Customers when treated in this manner believe that the company has no interest in them, and naturally resent this indifference. The employes of a telephone company should understand that the company is being paid for good service and that complaints should be thoroughly and immediately investigated, so that the customer will be thoroughly satisfied with the treatment accorded him in every case.

Old customers advertise a business in a most thorough manner. If telephone service is good, they do not hesitate to tell about it, but if they become dissatisfied they can do the company a great amount of harm if the cause is not removed. Experience in many business enterprises has shown that tact and good management can do much toward retaining the good will and patronage of customers and this applies to holding old telephone subscribers and gaining new ones.

Some New Features.

In the first issue in December TELEPHONY will introduce two entirely new features. Our rural cartoons, depicting in comic fashion newspaper reports of actual happenings in the field of the small town exchange and the country line, have for years been popular. Next week we will add

to this cartoon feature the first of a series of drawings depicting the amazing adventures of Alfalpha Granger, of Pine Top Ridge. These, "words and music," will be done by one of Chicago's foremost cartoonists and, we believe, will be entertaining to all our readers, although probably not at all instructive, either as regards the construction or operation of a telephone system.

Another feature, of more serious aspect, will be a weekly editorial by Herbert Kaufman, the well known contributor to many of the foremost magazines and daily newspapers. Mr. Kaufman is one of the most virile writers of the day, breathing optimism, ambition and achievement in every line. His style is peculiarly his own. He is no copyist. He admittedly ranks with any of the great modern writers on serious topics in his manner of expression and in his absolute conviction that he has a message to deliver to men with red blood in their veins.

TELEPHONY believes in giving the best obtainable to its readers, to whom it feels that it occupies a unique relation. Probably no other technical publication, presenting as this does the best and latest in the field which it fully covers diverges into the lighter lines of entertainment as does TELEPHONY.

It is something merely to be alive. It is also an advantage to be able to relax from our serious affairs at times and to reflect that there is a lot of humor in our business. If, by presenting some of the things which force a cheerful grin to the face of the Tired Telephone Man we have helped to make the sad things sink into obscurity, we shall feel that we have done well. If, at the same time, we shall have enunciated something of hopeful, uplifting inspiration, we shall feel that we have done even better.

"Please."

Considerable newspaper comment was aroused some months ago over the announced elimination by a big telephone company of the word "please," from the vocabulary of its operators. The idea caught the fancy of the newspaper writers, who argued spiritedly on both sides of the question and turned out galleys of "good stuff." But the trouble was, the argument was purely academic. Since the scheme has been adopted here and there, there has been an excellent chance for the expression of views based upon experience, but none have as yet met our eye.

During the last few days, we have been in a position to weigh the merits of the thing carefully, having frequently telephoned in a city having two competing systems, one of which still clings to the use of the word "please," while the other has abolished it. Our conclusions, therefore, are founded on actual trial, side by side, of both methods. And we here declare, unconditionally and without reserve, for the continuance of that small courtesy to the public wrapped up in the word "please."

As we recall it, the scientific manager who first wiped the word off the operator's slate did so because, by that act, he could save a fraction of a second on each call, which, in the course of a year, aggregated many hours. And hours mean dollars. This is, at first glance, an unassailable stand. But are the time and the dollars saved worth what they cost?

The good will of the telephone using public is an asset which every public service corporation strives to obtain and hold. Its value is beyond computation. Everything, therefore, which tends to injure the sensitive feelings of that public must be scrupulously avoided. Here is how the thing worked out. We would lift the receiver. Shortly a voice seemed to bellow at us, "Number!" Possibly it wasn't a bellow, but the unpleasant impression it produced would cause almost any dulcet tone to sound so. A moment more and then came the imperative command, "Drop a nickel!" And we dropped it, cursing under our breath and mentally disturbed for as much as ten or fifteen minutes—maybe twenty.

The competing company's operator, on the contrary—and this was the Independent company, by the way—came in with a gentle, "Number, please," with a rising inflection, and we answered with, "Central, 2361, *please,*" with a feeling that a cordial relation had been established at the start, and that we should receive the closest possible attention of our friend at the board. The other girl may not have intended to be gruff or rude, but she unquestionably sounded so. And that made all the difference.

It reminds one of the story of the Japanese visitors to New York, who, coming downtown in the subway in a local train, were hustled and shoved into an express at the first express stop. When they reached the Bridge and were at last landed on the platform, one mildly inquired as to the reason for the change involving so much discomfort. He was told that two minutes were saved by taking the express. "Ah," said he, "I understand. And what will you do with the two minutes now that you have saved them?"

A Practical Course of Study.

On other pages of this issue will be found a resume of the course of study conducted by the Alexander Hamilton Institute, of New York City. To us the mere outline bears a glamour of romance such as clings about the fanciful, but full of fact, tales of Edwin Lefevre dealing with the Street and its big financial men.

Our first impulse upon reviewing the course was to reach for a check book, to enroll at once for so facinating a pursuit of practical work-a-day knowledge.

Our second was to look further and see what telephone men we knew had already done so. And we were surprised to find scores of well known names listed among those who are now pursuing the route, or who have completed it.

There has been much haphazard work in the organization, financing and general management of telephone companies during the early years of the development of the industry, both among Independent and Bell plants, and which still continues here and there, though in much less degree. It is, therefore, gratifying to learn that a modern business-like path has at last been blazed through the commercial jungles, by specialists, which is plain for any man to follow.

Some Economics of Private Branch Exchange Installations

A Discussion of the Relative Merits of Manual and Automatic Private Branch Exchange Service from the Cost Standpoint of the Telephone Company and Subscriber—Data on Combination of Intercommunicating and Exchange Service

By John H. Finley

A considerable proportion of the business telephones in many of our large cities today is now connected to private branch exchanges and this proportion is sure to increase, as the density of the population and the number of telephones per capita increases. In view of this fact the question of the proper method of handling this class of telephone business both by the telephone companies and the users is one which should receive the careful consideration of all those interested in the question of efficient service and economical operation.

In considering this question from the standpoint of the telephone company, account must be taken of all of the factors of expense and revenue in order not to make the mistake of furnishing service at a loss or at no profit which amounts to virtually the same thing. The items of expense may be enumerated as: *a* First cost; *b* interest on money invested; *c* depreciation; *d* maintenance; *e* operation; and *f* insurance and taxes. While the items are not given in the direct order of importance, the list will serve to bring out those to be considered.

The best way to get at any proposition is to take a concrete example and follow it out to a complete solution. In this case consider a private branch exchange switchboard equipped with:

200 local lines.
4 operators' positions.
15 outgoing trunk lines.
20 incoming trunk lines.
60 cord circuits.

The following arbitrary figures are assumed. While not exact for all localities they will illustrate the principle for a few cases. The proportions will hold then, even if the actual figures differ considerably.

The cost of a 200-line private branch exchange switchboard with above equipment might be divided as follows:

Framework, including power accessories, out trunks, and operators' circuits	$ 500
200 line circuits at $2 each	400
15 in trunk circuits at $13.34 each	200
60 cord circuits at $15 each	900
Wiring building for 200 lines at $5 per line	1,000
	$3,000

All will agree that this is a fair estimate of the cost of a switchboard of this kind, being $15 per line for the board, equipment and wiring of building. To this amount must be added approximately $7 per line or a total of $1,400 for the telephone equipment making a total cost of $4,400 for a 200-line private branch exchange installation.

Assuming 10 years as the average life of the board and telephones and 6 per cent. interest on the money invested, the annual charges would be as follows:

Interest	$ 264
Depreciation 10 per cent	440
Maintenance at $1.50 per line per year	300
Insurance and taxes 2 per cent	88
Total annual charges	$1,092

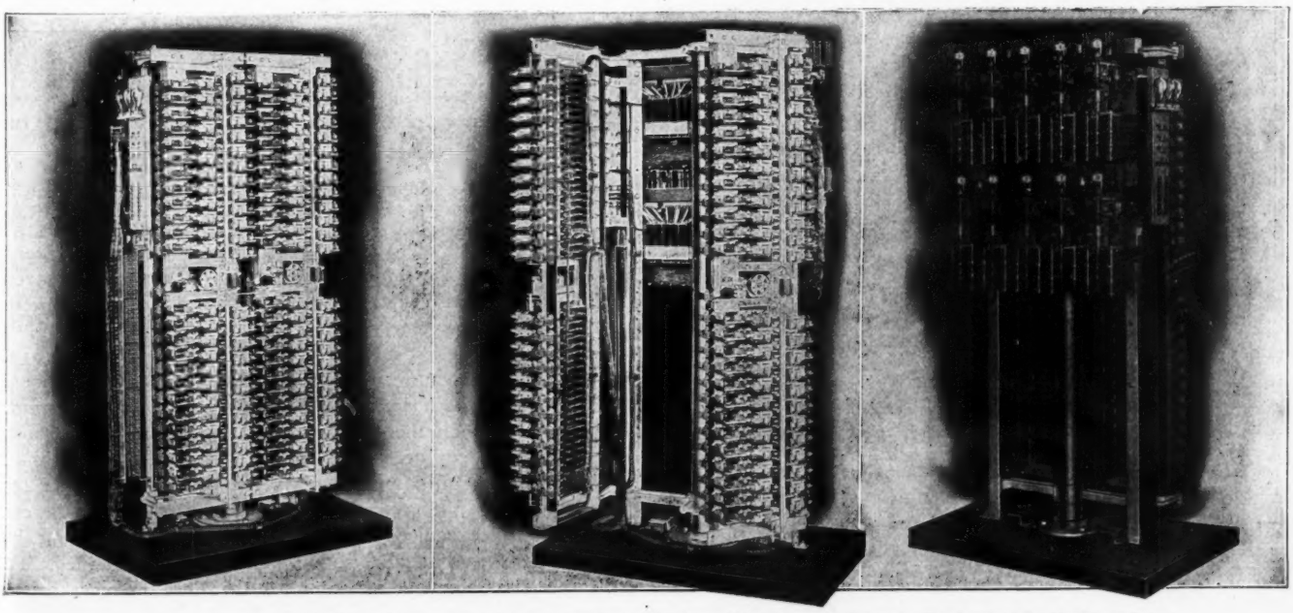
No charge for operation is included as that is paid by the subscriber.

The total first year cost to the telephone company of a manual P. B. X. outfit of 200 lines, is therefore made up as follows:

a.	First cost	$4,400
b.	Interest at 6 per cent	264
c.	Depreciation at 10 per cent	440
d.	Maintenance at $1.50 per line per year	300
e.	Operation	00
f.	Insurance and taxes 2 per cent	88
	Total first year cost to telephone company	$5,492

The total first year income is approximately made up as follows:

200 telephones at $6 each	$1,200
15 trunk lines at $365 each	5,475
Rent of board approximately	400
Total income first year	$7,075



Front, Interior and Rear View of a 200-line Automatic Private Branch Exchange Switchboards.

Of course to the total cost to the telephone company must be added the cost of the main office equipment and the operating expense incurred by the trunk service. Making an allowance of $15 per out trunk for cost of apparatus for the main board amounts to about $300 while allowing one-half of an operator's time for handling these calls adds $300 more. For trunking and handling calls from the private branch exchange board to subscribers would add approximately another $300 per year to the amount. These allowances total $900 which should be added to the first year cost of $5,492. This would make the figures appear as follows:

Total income first year	$7,075
Total expense to telephone company	6,392
Profit for first year	$683

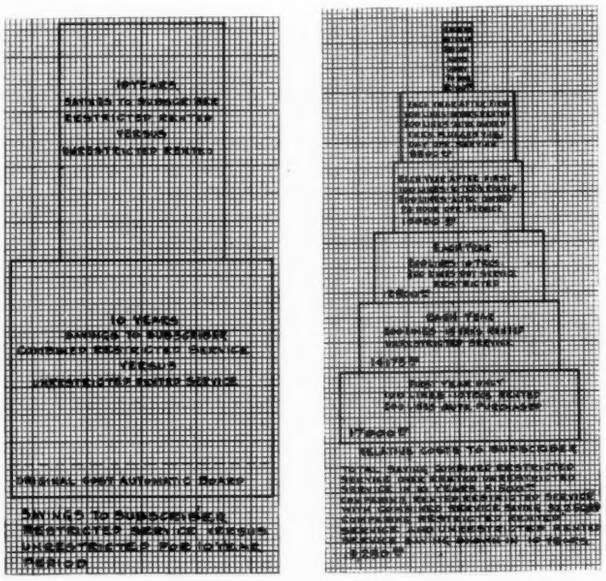
Naturally, there is some overhead expense to be added to the above, but it is reasonably certain that the losses on a proposition of this kind for the first year would not be very great. The second year the chances would be decreased, as the expense for the telephone company would be $6,392 less the first year cost of $4,400 or only $1,992. The figures for the second and subsequent years would be:

Total income	$7,075
Total expense	1,992
Difference	$5,183

The $600 for the central office operator is, of course, a constant quantity and the overhead expense is also constant, but the chances for loss are very slim with an annual income of $7,075 and an actual expense of about $2,000. In other words,

The Manual Private Branch Exchange Switchboard.

after deducting all charges for running expenses, including interest, depreciation and operation, the income would amount to approximately 110 per cent. of the original expense of the first year, and in subsequent years the income would amount to approximately the same amount per year. To put it a little differently, the income from a 200-line private branch exchange board would be sufficient to pay 6 per cent. on the investment, a 10 per cent. depreciation charge, all operating expenses, buy a new board, wire a new building, and allow a 10 per cent. profit. Or the income from a 200-line private



Comparative Costs—Automatic, Manual and Combined Service.

branch exchange board connected to a city line, in ten years, if profits each year were invested at 5 per cent. and left on interest, would amount to $61,765.50 in addition to replacing the board at end of tenth year.

The same questions confront the users of telephone service as confront the producers. Does it pay and is the service in use the best paying possible?

For the private branch exchange service under consideration, the costs to the subscriber are as follows:

1.	Rental on board	$ 400	per annum
2.	Rental on telephones	1,200	" "
3.	Rental on trunks	5,475	" "
4.	Salary of operators (4 day, 2 night and relief)	3,500	" "
5.	Rent for space of switchboard and accessories, light, heat, etc.	3,600	" "
	Total	$14,175	" "

This total amount paid by the subscriber for service compares as follows with the telephone company's cost of furnishing it:

Total expense to telephone company first year	$ 6,392
Total subsequent years	1,992
Total cost to customer, yearly	14,175

These figures show for the first year a return on the investment of 221 per cent., and approximately 700 per cent. the second and subsequent years.

The subscriber's cost is hardly a fair figure, however, as of course the telephone company is not responsible for the quarters in which the board is installed, nor the class of operators engaged, although there is no good reason why they should not be outside of accepted custom.

There is no question but what if this were the best that could be done, the service is many times paid for by the convenience and expediency with which business can be done, but if a better way is available, the expense is not justified. For instance, less than 50 per cent. of the lines in most private branch exchanges actually require trunk connections. By restricting the service to the lines requiring trunk calls, the

cost of trunks could and would be reduced at least 30 per cent. This would mean a saving to the subscriber of approximately $1,800 per year without impairing the service for the company.

This saving would be about all that could be made with a manual board, as the number of operators probably would not be materially reduced. Their work, however, would be considerably lessened by the reduction of the city calling, and that would be reflected in better service. A reduction of this kind would, of course, change the balance sheet of the telephone company considrably as well as that of the subscriber.

If an automatic telephone proposition were considered in conjunction with the city service, a considerably larger saving could be shown. For instance, the cost to the consumer would then appear about as follows, assuming that 50 per cent. of the lines do not require city service:

Rent on a 100 line, one position board	$ 200
10 trunks, $365 each per year	3,650
15 cord circuits, included in board rental	
100 lines at $6 each	600
3 operators, $600 each	1,800
Floor space rental, light, heat, etc	1,800
Total	$8,050

To this amount must be added the cost of automatic private branch exchange or intercommunicating equipment. This is as follows:

200-line automatic switchboard at $30 per line	$6,000
Wiring building at $5 per line	1,000
Maintenance at $3 per line per year	600
Interest at 6 per cent	420
Depreciation at 8 per cent	560
Insurance, taxes, etc., at 2 per cent	140
Rent of space, approximately	400
Total cost first year for automatic 200-line plant	$9,120

It is to be noted that the depreciation of the operatorless board is figured at 8 per cent. instead of 10 per cent. as in the case of the manual board. This is a fair proposition, as the only parts receiving wear would be those renewed by the maintainers. Thus the board would really last much longer than where the falling plugs and miss-plugging mar and destroy the framework itself.

Comparative costs for the combination of restricted manual and automatic service and for the manual only are given in the following table:

Total annual cost manual plant	$ 8,050
Total first year cost automatic plant	9,120
Total cost first year	$17,170
Total rental unrestricted manual board	14,175
Excess over regular rental proposition	$ 2,995

The second year and all subsequent years this annual charge would be:

Rented manual board	$14,175
Combined rented and automatic board	10,170
Decrease over regular rented board	$ 4,005

The advantage of the rented system would be that all stations connected to the private branch exchange board would have universal city service which might or might not accrue to the benefit of the company.

The main disadvantage would be the excessive cost of $4,005 per annum after the first year. This would pay for the automatic board in about two and one-half years.

Other features which should be considered are:

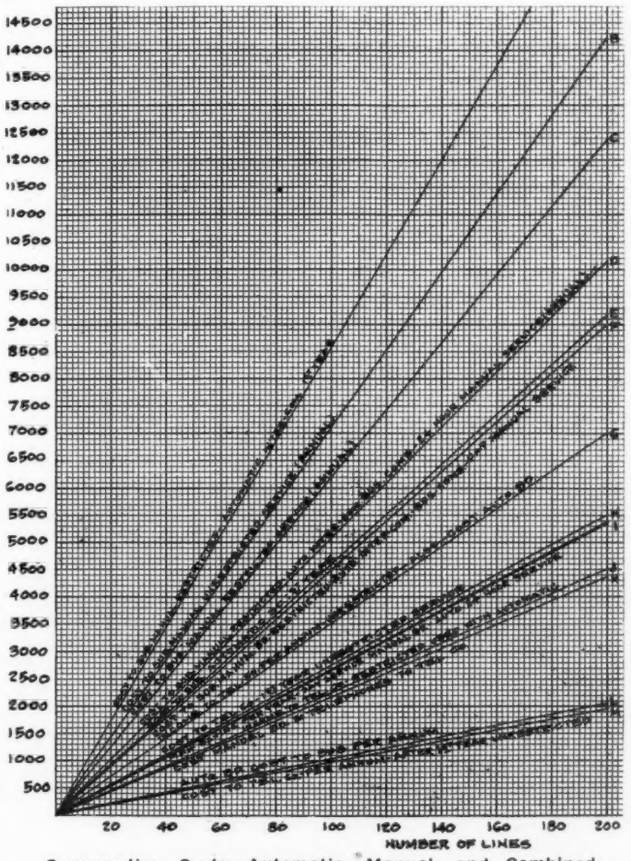
1. If local connections only are required for night service, five or ten lines direct connected to the city will suffice for the quiet hours and two operators could be eliminated. This would increase the saving to the subscribers by approximately $1,200 per annum, making the saving $5,205 per year in place of $4,005.

2. All stations would have 24-hour service, intercommunicating, without an operator's charge.

3. All stations would have a complete system, independent of the operator, at all times, and 100 of the lines would have a city calling system not clogged up with local business. The trunk lines, even when reduced 30 per cent., as figured, would be found to be busy a smaller percentage of the time than when all telephones were given connection to the city exchanges.

4. Secret conversation could be carried on as well from one office to another as though both parties were in the same room, thus saving time for both.

The accompanying curves and diagrams illustrate the points which have been brought out. The figures on which these calculations are based may not be exact, but are sufficiently accurate, all things considered, to use as a basis. It is believed all telephone men will agree that the figures are a fair average.



Comparative Costs—Automatic, Manual, and Combined Service.

Any special cases would, of course, have to be considered and calculated in a special manner to meet local conditions.

The purpose of this article has not been to give accurate figures, as doubtless in many cases the conditions may be such as to allow of a much greater saving than that shown while in other cases the saving might be less. Overhead charges are such a variable quantity that they have not been taken into consideration.

Change in Date of Bloomington Meeting.

It was announced in these pages last week that W. S. Vivian, of Grand Rapids, Mich., was to conduct a school for long distance operators at Bloomington, Ill., on December 10 and 11. This has now been changed to December 11 and 12. It is expected that a large attendance will mark this meeting, the other similar schools which Mr. Vivian has handled having proven exceedingly profitable.

Gold

Its Unstability—A Great Trouble Maker

By J. C. Kelsey

George Washington could throw a dollar across the Potomac River. If you have ever been at Mt. Vernon, you know that the river is very, very wide and that no base-ball player could do the trick with his trained arm.

George Washington was a wonderful man. He never told a lie. He swore but once in his life and then because he was angry with Light Horse Harry Lee.

He could throw a dollar across that great, wide old Potomac River, because a dollar went farther in those days.

Even fifteen years ago you could throw a dollar 50 per cent. farther than you can today. And it looks as if you can throw the present dollar much farther than you can fifteen years from now, and it will not be due to old age or glass arm either.

Money is an interesting thing. We like to talk about it in a light sort of a way—what it will buy and what it will do beside, yet we give very little serious thought to it.

The whole world is up against the problem of high cost of living. We all complain over the increasing prices of everything, except that which we sell.

According to a Yale teacher, Irving Fisher, we have the cart before the horse. He says it is because money is losing its purchasing power.

We have fixed units, such as the pound, the yard-stick, the volt, ohm, ampere and horse-power, but a gold dollar changes like a chameleon.

No one has ever seen fit to make a standard for money. In old days, if a king owed money in great, uncomfortable quantities, he decreed that a gold piece should be reduced in size. If other people owed him, he would increase the weight of the gold money and cheat his victims.

Depreciation is not an exclusive telephone term. We hear a great deal about depreciation in automobiles and other devices.

Do you know that bank deposits depreciate? They do. The person who deposited $100 in a savings bank fifteen years ago at 3 per cent. interest compounded, will find that his $150 will only buy what the original $100 would have bought. In other words, the interest has barely offset the depreciation.

No wonder people argue themselves into buying automobiles, and having pleasures, for thrift seems to have set-backs, too.

In the Revolutionary War, the Colonies had to go on their nerve and credit. The Continental paper money fluctuated with the victories and defeats of the war.

If the Americans got severely whipped, they would use the paper money to paper barber-shops with. If the army won, then it would be pried loose and circulated.

You have heard a man in deep disgust say a man was not worth a "Continental damn." Well, that originated from the greatly depreciated Continental money at the low ebb of the Colonies' fight.

In the Civil War, business interests, forgetting the experience of the Revolutionary War (or rather not remembering), acclaimed the issue of greenbacks. It was not long before a dollar was worth fifty cents.

It was a cinch for a man with a mortgage on his farm, or for a man who owed any money. But it did tend to ruin the creditor.

Later, when the greenbacks were redeemed, the fellow who had neglected to pay when he had the fine chance, got double-crossed to make up for the other fellow. And some lucky creditors made a pile of money.

You can see that a dollar is not a dollar at all!

Have you ever read Mark Twain's book "A Yankee in King Arthur's Court?" If you have not, I am ashamed of you.

It is one of the priceless gems of literary humor, yet in it are most serious matters of love, money, economics and such fully discussed.

You remember the Connecticut Yankee is struck on the head with a bar, and is carried back to the sixth century. In competition with Marlin, the astrologer, the Yankee had to do many things.

He made this prediction to his companions: "In 700 years wages will have risen six times what they are now—here in your region— and farm hands will be paid three cents a day and mechanics six cents.

"'I would I might die now and live then,' interrupted Smug, the wheelwright.

"Two hundred and fifty years later—pay attention now—a mechanic's wages will be—mind you that is law, not guesswork—a mechanic's wages will be 20 cents a day.

"Wages will keep on rising, little by little, as steadily as the tree grows, and at the end of 340 years more, there will be one country where the mechanic's wage will be 200 cents a day."

It knocked them absolutely dumb!

Not a man could get his breath for two minutes. Then the coal-burner said prayerfully "Might I but live to see it."

"It is the income of an earl," said Smug.

Professor Fisher uses this interesting story to an excellent purpose. In the sixth century, 200 cents was the income of an earl.

In another part of the book, the Yankee tries to show that high money wages do not mean prosperity when everything is high in proportion.

No one can see it even now—all they want is the increased wage—that certainly is human nature, anyway.

This surely applies to the world today. Increased wages merely reflect the increased cost of other things.

I remember when a man got $125 for the same work in Duluth as a man got $75 for in Minneapolis.

It was in the different cost of living, together with the increased hardship of living.

The tendency of ages has been the depreciation of money. I expect Charlemagne could have thrown a dollar across the English Channel, and that Caesar could have thrown one clear across the Mediterranean Sea.

I wonder what Abraham could have done in this line.

This depreciation falls hardest upon the beneficiaries of estates. Estate trustees always buy bonds because of the better chance of getting a return from a coupon security than from stocks.

But the uncertainty in stocks regarding returns or dividends has not resulted in half as much loss or suffering as the depreciation of the investment in purchasing power.

You can see this by the constantly increasing rate of bond interest. Thirty years ago, a 3½ per cent. bond was considered

a very daring piece of finance. Anything about that rate made a bond look like the tail end of a frenzied promotion enterprise.

Today, municipal 5's are possible and industrial 6's not despised. Even New York 4½'s are selling below par, with her credit unimpaired.

I can't help but think of the owners of the West Shore bonds which are to run until about 2,300, A. D., before coming due. I think these pay 3½ or 4 per cent.

According to depreciation, the poor and many great grandchildren following, will find themselves back to shirt-sleeves.

It's a great problem for a man to settle—to decide upon the investments which his family shall make after his death. It seems that it is divinely intended that no one family shall ever control the earth very long.

According to this theory, the estates of great wealthy families will slowly distintegrate, unless, of course, it happens to be New York real estate.

My first recollection about gold was in the scripture lesson. The golden calf, so ardently admired by the fleeing Israelites, seems to be the first instance.

Shakespeare thoughtfully told us that "all that glitters is not gold." My Spencerian copy-book told us that "silence is golden.

Gold seems to be man's idol, the word "gold" causing the hills of Chilkoot to be gorged with rushing men.

The cry of suddenly-found gold makes every human pulse throb. Yet one man says it is absurd that the civilized world depends upon a standard of value, which has no real use except for filling teeth!

We surely have a gold superstition.

Professor Fisher further says that it is time that it becomes common knowledge how gold has tricked and swindled people throughout history.

That the modern businessman, deliberately in debt, permanently in debt, must realize the necessity of better binding the present and the future.

In other words, there must be some stability in the purchasing power of money.

I am not learnedly discussing on this topic of gold. I admit that I know little about it. I do know that I can't throw a dollar across the Potomac. Can you?

While on the question and its purchasing power, I saw a story in Finance which shows how hard it is to get money out of a French bank.

Of course the Frenchmen are worrying over this depreciation of money. And their banks are just as careful as ours.

A Frenchman would have a merry time getting a check cashed in Chicago.

But this is the way in Paris. You enter the bank about 10:30 and present your check, carefully endorsed, at the cashier's window. After a long time you get a slip of paper, stamped and numbered.

The cashier points majestically to a bench in the hall, and indicates that you are to sit there until called for. You have to wait there until your number is called out.

About 1:30 the cashier calmly returns and soon your number is called out. Do not be too elated. You are not through yet!

Another slip of paper is handed you to be filled out regarding age, nationality, religion and other important (in France) details.

About 3:30 your number is called out, and you walk briskly to the desk. Remove your hat, or the policeman will suggest its removal. Put on a good pose, for your request to come to the window is for another purpose—it is for your photograph.

Again you are directed to the bench to consume yourself with patience. If you are lucky, you will get your money about 4 o'clock.

Of course this may be over-drawn, and it may be taken for exactly what you think it is worth.

We can make fun of foreign ways, but I will bet that forgers and other crooks are scarcer there than in America.

Another private bank has gone wrong in Chicago. Luckily, a great judge has charge of the proceedings.

Judge Landis comes as near being an inspired judge as any I know of. He found a defunct bank run by a doctor and a 17 year old nephew as a cashier.

Before the bank broke, the banker's wife is alleged to have drawn $20,000 and hidden it. The doctor is crazy, or pretends to be. But the depositors will lose, of course.

The point of the story refers to a recent article in TELEPHONY, of how the Bankers' Association had failed to take action at the Peoria convention regarding private bank supervision, because of the cowardice of the big Chicago banks.

Judge Landis scored the big banks severely and took official cognizance of their cowardice in neglecting to protect the widow and orphan, in preference to their own private bank balances.

It will take a long while for the cowardice of the big Chicago banks to be lived down.

It will do big bankers little good now to rail at the cowardice of politicians in not reforming the banking business so as to make it a dead cinch for the bankers.

Something must be done to keep bank deposits safe and sacred. I don't believe the big Chicago banks realize how much they lose by a private bank failure in Chicago.

Coupled with the danger of depositing money in banks, is the depreciating value of savings. Say, it looks as if everything were conspiring to destroy thrift nowadays!

George Reynolds, of a big Chicago bank, in his paper on "Bank Reform" and the money trust, speaks vehemently about the indifference of members of Congress on the question of currency reform.

He is so worried about it that he predicts it will take another panic to wake them up. I am sure the world will welcome any just reform. But charity and reform should begin at home.

The big Chicago banks had better take an extra drink of Dutch grog before the next state Bankers' Association. Then they will run the risk of losing a few measly bank deposits from down state. And I'll bet that even this condition is entirely imaginary.

How closely does the beam and the mote theory apply here?

Leaving banks and other professed enemies of competition, I want to comment on the decision of the United States Supreme Court on the constitutionality of the "unfair sales" law of South Dakota.

If this idea is followed out by the next administration, we will have a real remedy for business. It is the only way for little business to be protected from the big competitor.

The big competitor, in spite of its general inefficiency, usually has its favorite or exclusive customers, who furnish the sinew for the unfair sale idea when against competition for other people's customers.

Our own telephone case is typical. The Bell company exclusively patronizes its manufacturing ally. And it enables this manufacturing ally to seek out the customers of the Independent telephone manufacturers.

Under the conditions, the Bell has no right to enter the competitive field without canceling its exclusive contracts.

It is an "unfair sale" condition, with a vengeance. And it also indicates "golden calf" conditions.

Gold is unstable and all who violently seek it at the expense of others, will share in its unstability.

MORAL:—Gold is not yet confined to tooth-filling!

Service Association Committee Meets.

The executive committee of the Central States Telephone Service Association met on Tuesday in the offices of the association's president, J. W. Callahan, in Chicago. The meeting was well attended and various questions of policy were discussed. But it was found that it was impossible to finally decide some matters of importance and another meeting has been called for December 17. At that time, it is believed, the policy of the association will be definitely defined.

Court Upholds San Francisco Merger.

The merger of the Pacific Telephone & Telegraph Co. with the Bay Cities Home Telephone Co., March 15, which, according to the claim advanced in a suit by the city, resulted in an illegal monopoly in San Francisco, has just been upheld in a decision by Superior Judge Ellison. The opinion sustained the demurrers of the telephone corporations to the city attorney's complaint.

Judge Ellison based his ruling principally upon interpretations of the general telephone franchise act of 1905, which he declares gives no city council or supervisory board the power to issue telephone franchises in which the corporation obtaining the franchise may be prohibited from transferring its properties.

Briefly, the court ruled that the San Francisco supervisors in granting the Home Telephone Co. a franchise October 3, 1906, had no right to specify that the company should not transfer its interests. The court held that the supervisors were not empowered by any clause in the charter to grant a telephone franchise, the nearest approach being authority to supervise the placing of poles and the quality of the work. The prohibitory power exercised by the supervisors is not allowed by the act of 1905, according to Judge Ellison. The demurrers included the Bay Cities Home Telephone Co. and the Anglo-California Trust Co. That the city would appeal was indicated by City Attorney Long.

Judge Ellison reviewed the act of 1905 and stated that "It is apparent from several considerations that the franchise under review was not granted under any supposed power conferred on the city and county of San Francisco by its charter," but that the power came from the general legislative act.

The court held that the act provides that telephone franchises may be granted only upon conditions in the act and that a careful scrutiny fails to show any clause or sentence giving the municipality power to restrict the sale.

Kansas Association to Meet Next Month.

The annual convention of the Kansas Independent Telephone Association will be held in Hutchinson, Kans., on December 17, 18 and 19. The regular time for this meeting is the third week in January, but at a meeting of the executive committee, held November 21, in Kansas City, it was decided to call the convention earlier this year. The program will be announced shortly.

National Association Directors to Meet.

The directors of the National Independent Telephone Association will hold their next meeting on December 9, at the offices of the association, in the McCormick Building, Chicago. At this meeting the date for the next annual convention of the association will be fixed. The notice of the meeting, signed by Manford Savage, president, is, in part, as follows:

"At this time, under the practice and by-laws, the date and place of holding the annual convention will be fixed. Suggestions will be presented to change somewhat the character of the convention.

The newly formed Central States Telephone Service Association will have a committee to meet with the board of directors and this will be a very important feature of the day."

Inasmuch as the by-laws provide for at least sixty days' advance notice of the annual meeting, the latter will probably be fixed for some time between the middle and the latter part of February. The committee of the new Service association will undoubtedly be prepared to offer some interesting suggestions looking to a joint meeting of the two bodies.

Bell Telephone Rates in Montreal.

In connection with the application of the city of Montreal, Quebec, for an order reducing the rates of the Bell Telephone Co. from $55 to $50 for business, and from $35 to $30 for residence telephones; and for the abolition of extra mileage rates within the city limits, the Board of Railway Commissioners for Canada has just issued its decision.

The board orders that the rates shall remain at the present charges of $55 and $35, but that these rates shall include service in all parts of the city within a radius equal, to the distance between the company's "Main" exchange and Montreal West. This ruling means that the new telephone area of the city will extend approximately seven miles in each direction, and it will abolish the present excess mileage charge of $5 per quarter mile which, in some intances, increased the residence rate from $35 to $130 per annum.

The result of the board's order will increase development of the residential parts of Montreal very materially, as it brings the telephone within the reach of thousands of residents who could not afford to pay the extra mileage rates.

The board gives as its reason for refusing to order a reduction of the base flat rate, the fact that the increased telephone area will impose on the company a large expenditure to take care of the increased development and a higher ratio of operating expenses.

As the existing rates of $55 and $35 are low in comparison with cities of the same class in the United States, the refusal of the board to order a reduction is not a surprise to telephone men.

Francis Dagger, of Toronto, aided the law department of Montreal, in the preparation of the city's case.

Rehearing Denied New York Bell.

The application of the New York Telephone Co. to the New York Public Service Commission for a rehearing on the order made by the commission on October 15, requiring that company to furnish telephone service to the Metropolitan Telephone & Telegraph Co., New York City, has been denied by the commission. The commission has also denied the application made on behalf of the parties interested in the former Metropolitan Telephone & Telegraph Co., which was dissolved in 1896, for leave to intervene in the proceedings.

Railway Telephony—Practical Points in all Branches

Joint Meeting of Eastern and Western Divisions, Association of Railway Telegraph Superintendents—J. A. Kick Discusses Railway Telephone Maintenance—Telephone Development on the Lackawanna Railroad—Some Practical Schemes Which Are in Use on That Road

Meeting of Superintendents of Telegraph.

A joint meeting of the eastern and western divisions of the Association of Railway Telegraph Superintendents was held in the offices of the Chicago & Northwestern Railway Co., Chicago, November 20. The meeting was called to order by E. A. Chenery, chairman of the western division. Mr. Chenery's popularity among the telegraph superintendents is indicated by his re-election as chairman which was the first business transacted. This is his third term as chairman of the western division.

Mr. Chenery then announced the program for the day which included discussion of points about which members were in doubt, and answer questions that might arise in conjunction with the work of the organization or any member. In the afternoon a trip was planned to the plant of the Automatic Electric Co., and also a visit to the Chicago tunnel. Mr. Finley of the Automatic Electric Co. was requested to outline the plans for the afternoon trip, after which a roll call was made to ascertain the number who intended taking it.

J. P. Church, superintendent of telegraph of the Wabash, Railroad brought up the question of eliminating the noise incident to the operation of telegraph instruments in offices where telephone train dispatching equipment was installed. L. M. Jones, superintendent of telegraph of the Sante Fe, stated that troubles of this kind had been cleared by mounting the transmitter arms on separate pedestals or on the wall instead of on the table where the instruments were working, as it was found that most of the disturbance was due to mechanical vibration of the instruments and arm, rather than noise in the transmitter.

U. J. Fry, superintendent of telegraph of the Chicago, Milwaukee & St. Paul Railroad, stated they had gone a step farther. A separate contact had been arranged in the transmitter key which opened the sounder circuits of the office when the transmitter key was depressed. Mr. Fry said that he had been able to arrange for sending telegraph sounds over the telephone in cases where the dispatcher had occasion to use both telephones and telegraph in his work. This he considered advisable as he thought it a decided advantage to be able to notify other telephone operators that the dispatcher was busy and it served to avoid confusion. It was accomplished by mounting a transmitter button on the base of the telegraph relay, and connecting it through to the telephone circuit, so that the mechanical jar of the armatures closing and opening, produced an impulse over the telephone line. The operator could then read the Morse direct through the telephone receiver. This was an interesting development and was new to a number of the members.

E. C. Keenan, superintendent of telegraph of the New York Central Lines, West, raised a point on the handling of railroad telegrams by mail. Several suggestions were made and different methods of handling this business were discussed. F. T. Wilbur, superintendent of telegraph of the Illinois Central Railroad G. A. Cellar, superintendent of telegraph of the Pennsylvania Lines, West, and L. M. Jones, described the systems in force on their respective lines. No final decision as to the best method was made, as the conditions to be met on the various railroads represented, seemed to each demand special treatment.

Mr. Church then raised a question as to the advisability of using both Gill and Western Electric selectors on a telephone line when desired. Messrs. Harkness, General Railway Equipment Co., Hyer, Western Electric Co., Finley, Automatic Electric Co., and other members spoke on this subject. J. J. Ross, superintendent of telegraph of the Michigan Central Railroad summed up the situation by stating that anyone trying this scheme would multiply their chances of trouble, and all seemed to agree that such would be the case.

Members of the Association of Railroad Telegraph Superintendents Who Attended the Joint Meeting at Chicago, November 20.

After this discussion a short executive session was held.

In the afternoon about 55 met in front of the Northwestern offices, and proceeded in taxicabs to the Automatic Electric Company's plant at the corner of Morgan and Van Buren Sts., where they were received by Elsworth Keith, the manager of the company's Supply Sales Dept., and Mr. Rosenberg, the purchasing agent of the company. They were escorted to the office of Mr. Harris, president of the company, where an illustrated talk on automatic telephones and circuits was given by Arthur Bessey Smith, the technical expert of the company.

The point brought out most clearly by Prof. Smith was the remarkable simplicity of the automatic apparatus and the wide margins of operation. The discussion was not a technical one, but it showed very clearly the high efficiency of the apparatus, its accessibility and the ease of maintenance.

Professor Smith made the statement that over a quarter of a million of automatic telephones of the company's make were now operating. They are distributed over almost the entire globe, there being automatic plants operating in 26 states; thousands of lines are equipped in Great Britain; and boards in South America, New Zealand, Canada, Spain, Italy, Cuba and in fact, all parts of the world, testify to the wide spread appreciation of the automatic system.

At the close of the lecture the visitors were divided into groups and under guides provided from the engineering department, proceeded by different routes through the factory. There was considerable surprise expressed by the guests at the size of the plant and scope of the business.

Among the apparatus which elicited favorable comment was the cordless P. B. X. This is made standard with a 10-line capacity but can be arranged for any desired number of lines. Connections are made by the throwing of keys instead of by plugging.

The automatic private exchange board, however, attracted the most attention, due to the novelty and simplicity of the idea. In the railroad field, there seems to be an insistent demand for the use of this type of equipment, as division headquarters, main offices, railroad yards, shops, and other places could use considerably more telephone service to good advantage, and it can be obtained economically by use of this type of board.

The new automatic selector for train dispatching also received a good deal of favorable comment. It appears to be a simple and reliable piece of mechanism, having many desirable features. Many other interesting and novel things were seen and explained in the factory trip.

The Automatic Enunciator Co. entertained the visitors by sending music over its wires from a new specie of Victrola located at a distance from the auditorium where the parties gathered when returning from the shop tour. Train and other announcements were made for the benefit of the superintendents.

Shortly after four o'clock the company again embarked in automobiles for the trip through the Chicago tunnel.

By the courtesy of the Tunnel company, a trip of several miles under Chicago's streets was made after which the party broke up.

All members of the association who attended the joint meeting, expressed themselves as highly satisfied with the day and felt that their time had been well spent.

Maintenance of Railway Telephone Equipment.

By John A. Kick.

Maintenance on these systems is very important and a higher class than on the telegraph dispatching circuit is absolutely necessary, the degree of success in operation depending almost entirely upon the attention given at the master station. No inspector or lineman can do well if the trouble is not accurately and definitely located by the master station and no master station can locate the trouble without means or methods. It is ridiculous for a master station attendant to send a lineman after a ground in a regular station arrester when it could have located and cleared in a few seconds.

It is preferable to have such circuits under the direction of a first-class wire chief and provide his office with equipment for testing for all troubles. Circuits should be tested frequently for insulation and current readings taken of the main battery with a view to keeping the line clear and the outgoing current up to the required amount. It is well for daily inquiry to be made of two or three stations, say one at the middle and one at the distant terminal, to ascertain the amount of, if any, noise on the circuit. It is well known that with 20 to 50 selective bridges on the line, the circuit may be quite noisy at one terminal and practically no noise at the other, or it may be noisy at the middle and quiet at both terminals.

One effective way of securing an insulation test of the entire circuit, is to test the simplex. If found clear, it is an indication that the line wires are in excellent insulation condition with

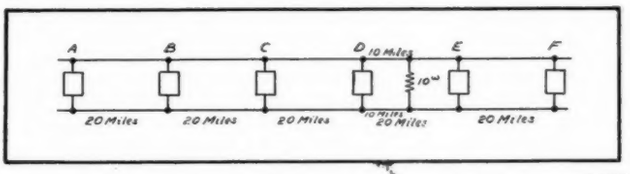


Fig. 1. Circuit Showing Location of Cross.

respect to ground and other circuits, as the simplex circuit is composed of both line wires, or in other words, the total line capacity for escapes. There may be some irregular insulation conditions between one side of the circuit and the other, but if serious, it can be readily detected in the transmission.

Sparking at the main signal relay points occurs on both the make and break but is more severe on the break, especially if the relay armatures do not travel in exact unison. The closing of the points, is the process of making a circuit and if the one relay be on a little heavier adjustment than the other, its armature contact point will not arrive at the closed contact point at the exact time as that of its mate. Therefore the air gap resistance is reduced to that of the separation between the one armature and the closed point, causing severe arcing when the armature point approaches contact. When the local circuit is broken the heavier adjusted relay pulls away first and draws an arc that soon destroys the platinum points or causes poor contact.

Arcing at the main relay points has a very decided influence on the outgoing impulses. In fact, this trouble frequently causes irregular ringing but the remedy is simple, in that the relays must be given adjustments to work in exact unison, and the trouble disappears if the points are bridged with condensers.

Proper adjustment of selective signaling main line relays was explained in detail in TELEPHONY, July 29, 1911, and only the more important points are now mentioned. It is impossible to properly adjust the main line signal circuits except by observation of the outgoing current conditions during the adjustment, as it has been found that a change of adjustment however slight, has a noticeable effect in the average current outgoing.

The same is true in the local circuit of a local battery step-up selector as is also the case where the time constants are changed in the master key without a corresponding change in the other current controlling mechanism.

The greatest mistake in the maintenance of selective systems is the changing of the adjustment of individual selectors, especially when it is noticed that several fail during the same period. Nothing is more unwarranted than to send the maintainer to readjust several selectors which have failed for the reason that the failure of more than one selector indicates troubles not confined to any one selector. Ninety-nine times out of a hundred it will be found chargeable to a changed line current condition due to line or equipment troubles other than that of the selectors.

If the initial adjustment is made by the method of observing the current in both the line and local circuits and the same plan is used in all subsequent installations, there should be no call to readjust a selector, except in case some part becomes loose or is displaced.

Local selectors, readjusted to offset irregular line conditions, will need an additional readjustment when the line current again becomes normal. The several readjustments made without current readings being taken, soon destroy the marginal values by getting some of the selectors to the top and others

to the bottom of the current margin, causing failures at every slight line current irregularity. This is shown diagrammatically in Fig. 10 of an article on selector adjustments and location of wire troubles in TELEPHONY of March 13, 1911.

It is very indefinite to send a lineman after a circuit trouble with the advice that, "the circuit is in trouble between A and Z," or "the circuit seems grounded between A and Z." In the first case there should be some information as to the nature of the trouble or at least some detail as to the indications. In the second instance the circuit is or is not grounded, a trouble which can easily be located.

A voltmeter test will locate a ground but if no voltmeter is at hand, a momentary short at the stations will indicate and locate it. If on a metallic circuit there is a ground or an open on one side of the line, the ground will produce a noisy circuit condition; while not interrupting the selective signals, the open line wire will interrupt signaling to stations beyond the open. The ground will interfere with the transmission only in its power to produce an unbalanced capacity condition, this power depending upon its location and the inductive influences surrounding the circuit. In the case of the open, the signals will be interrupted and the transmission almost or entirely interrupted beyond the open.

Some instances are known where one or both line wires open in a way office did not entirely interrupt the transmission, as the capacity of the wires in long twisted pairs or cables was sufficient to permit conversation across the opening.

An indication of such trouble might be had from a high resistance cross. It would perhaps interfere with the signals both beyond the trouble and at one or more stations on the near side of the cross, in addition to noticeably affecting the transmission in the same manner. The lower the resistance of the cross, the more noticeable will be the effect in failure to signal and talk. That is, a low resistance cross on a dead short circuit, 100 miles out, may affect the signals and transmission to all or nearly all stations on the near side and all stations beyond the trouble will be practically cut off.

When all stations are not test stations where the line can be opened, the location of a cross between two stations is an operation which requires no little care, in that a cross a short distance on the far side of a station will give almost the same indication from that station as though it were on the near side. In Fig. 1 a line is shown with several stations having a cross just beyond station *D*. The circuit conditions to stations *D* and *E* is shown in Fig. 2. It demonstrates that it is to be expected the transmission to and from station *D* will be seriously affected.

Station *D* is removed from station *A* 600 ohms, and the cross 100 ohms. In other words, the two loops bear a resistance ratio of 6 to 1 respectively or will take a current in the reverse proportion of 1 to 6. This statement does not cover all the technical points of the ohmic resistance of the cross as against the effective resistance of the telephone set at *A*, but is intended to be clear and practical rather than to carry the subject into a technical analysis.

Station *E* is practically shunted by a 100-ohm resistance when

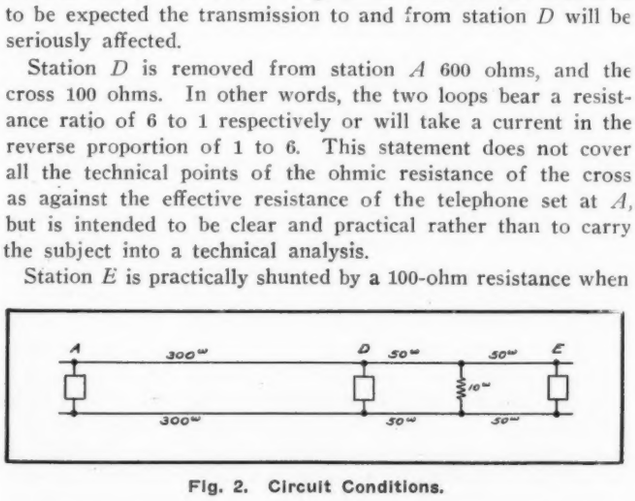


Fig. 2. Circuit Conditions.

considering the effect on service in the direction of terminal *A* and by 110 ohms effective in the direction of terminal *F*.

Experienced wire chiefs have little difficulty in making tests accurately, but unfortunately all dispatchers' circuits are not maintained by such talent.

In Fig. 3 is shown a ground on one side of a pair of wires with a short of no resistance for test at station *D*. Line wires 1 and 2 are now in effect to the station, grounded at the same point producing a perfect static balance between the two wires and indicating that the trouble is beyond *D*. Should the test

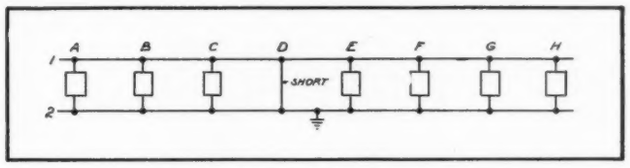


Fig. 3. A Short Circuit With Ground on One Side.

be made from *H*, the short at *D* will not balance the circuit but will approach that condition depending in effect upon the ditsance from *D* to the ground.

Assume the ground to be five miles from *D*, then to *H* one line wire grounds the distance from *H* to *D* plus five miles and the other *H* to *D* less five miles or a difference of 10 miles, which should produce sufficient static unbalance as to be detected by the testing office.

The greatest difficulty in making these tests for cross ground and open, is in expecting way station attendants to improvise some means of shorting the line by using a car seal or a jack knife. This results in high or varying resistance in the "short" during the test, with frequent false indications. Provide a short circuiting switch at the way station so that it can be closed by direction of the dispatcher or wire chief and thus insure quick and accurate test.

On selector circuits with an "answer back," the wire chief can detect weakening batteries or changes of adjustment by noticing the tone of the answer back, the tone being thick and sticky when the bell does not release quickly. The tone is thin and irregular when the battery weakens and this is also true when the bell is adjusted on too high a tension.

It is quite possible for the wire chief at the master station to monitor the adjustment of the bell at the way station by hastening the answer back while the maintenance man adjusts the string. Maintainers can cover several circuits and do good work, if given motor cars. They should be carefully coached to follow a thorough system of inspection.

Telephone Development on the D. L. & W. Railroad.

By C. S. Rhoads, Jr.

The "Lackawanna" has the distinction of being the first railroad to be equipped completely for telephone train dispatching. This is in a large measure due to the energy and progressiveness of the superintendent of telegraph, L. B. Foley, whose ideas were carried out in a practical manner by his chief telephone inspector, J. J. Graf. At the present time Mr. Graf is busy installing inter-calling message circuits, telephone booths, portable train sets and constantly bringing forth results which are not thought of by many other telephone men. Scranton, Pa., is the center of activities on the D., L. & W. and Mr. Graf is located there where he is in close touch with the situation. Three telephone dispatcher's circuits radiate from Scranton and each is paralleled by a telephone message circuit. A total of 10 dispatching circuits is employed on the Lackawanna system.

With the development of the telephone and selector service, the fact that a better and more uniform source of current supply must eventually be provided, is being forced upon the users. This improved current supply can be one of several varieties; storage battery of sufficient plate area to give the required ampere-hour life; motor-generator set of the quick-starting variety used only during each selective call, driven either from a power circuit or a low voltage storage battery; or a motor-generator set driven from a power circuit and running constantly. The choice of one of these depends upon

the local conditions in almost every case It would be improper to state that any one of the three best suits every location and condition, as it is self-evident that the voltage, amperage, number of circuits, amount of use, etc., is going to vary widely. At Scranton on the D., L. & W., Mr. Graf

J. J. Graf.

has used a motor-generator constantly running, as his source of current supply, with dry cells for emergency use.

The selector is to be put to a new and unique use on the "Road of Anthracite," and it is believed the same idea can be used in many another section of the country. Mr. Graf puts a device in the tank at water stations, connected to a selector. The dispatcher has a freight that can make a certain point, if it can get water at this station. He calls the selector at the tank and if the answer back comes in, he knows the water is still up to a certain level and that he can let the train take water there. The absence of an answer back indicates the water has fallen low, operating the device to open the local circuit. There are many isolated water stations in this country which handicap train service by running short of water at unexpected times. At night this apparatus is of especial benefit to the dispatchers.

Another new idea brought forth by Mr. Graf is for use in connection with long isolated sections of road on which, due to lack of traffic, *OS* offices are infrequent. Here it is proposed to insert short insulated track sections which, when shunted, will operate a key. This in turn will operate a register in the dispatcher's office showing that a train, going in a certain direction, passed over the insulated rail indicated by the number shown by the register, at a certain time. It is not proposed to depend on this indication to the extent of issuing running or passing orders to opposing traffic. But the dispatcher could direct interchange, yard clearance and pusher movements to adjust themselves to the apparent time being made by the train before it reached an open office, which in many instances would be too late to make the mentioned arrangements without causing delays or losing interchange connections.

The mechanical connection of this registering key to existing train order signals is also being thought of, because of frequent accidents caused by the operator not displaying the signal at all or displaying the wrong one. The idea under consideration is to attach a key with a different number to each signal at all train order offices, so that the dispatcher will receive an indication when he orders a signal displayed. From the number received, he can tell at a glance whether the proper one has been thrown. In the event of the signal being withdrawn through some misunderstanding among the occupants of the office or by relief, he will again receive an indication, with, however, the number reversed.

There are many short telephone lines radiating from the Scranton station switchboard to yard offices, towers and freight offices. These are utilized for time service by placing repeating coils on them and simplexing them. These simplex circuits are connected to the master clock in the dispatcher's office and to the storage battery. By this means all the railroad clocks in Scranton are set each hour. This enabled the road to save the expense of the Western Union time service which only sets the clocks once a day. The saving much more than pays the interest on the investment in repeating coils and gives perfect time service.

The Lackawanna has endeavored to give its dispatchers access to all departments with which they should have communication to accomplish prompt results. Wherever switchboards are maintained, the dispatcher is supplied with a tie line to the board, through which he connects with all departments. At outlying stations, however, this was not possible unless special circuits were built, which in many instances necessitated a considerable expenditure. To overcome this objection the dispatchers' circuits were simplexed. A grounded bell was installed in the office with which he desired connection on existing local circuits and a selector, equipped with a double contact relay instead of the usual bell, was installed at the nearest point where the local circuit joined the main line. With this arrangement when the dispatchers want the office mentioned, they merely turn the key operating the selector with the relay and, instead of ringing the usual local bell, they pick up the local line and ring the grounded bell. The ringing is in turn stopped by the person answering, when he depresses the transmitter key button. When the connection has accomplished its purpose, the dispatcher depresses his bell silencing key and restores both circuits.

A chart, showing all the circuits on the D., L. & W., and where each is cut in, is on the wall in Mr. Graf's office. Each morning the trouble reports are received and noted on this chart with glass headed pins of different colors. If a case of instrument trouble is at one place a red pin indicates it; a case of line trouble and its location is shown by a pin of some other color. The trouble and its location can be seen at a glance. Provision is made to show when men are out after the trouble and after a case is reported cleared, the necessary corrections are made on the board.

A monthly chart is compiled from these daily records and shows at a glance what the situation was at any time during the month. It also shows when trouble of any particular kind is too frequent for efficiency and steps may be taken to eliminate the cause.

The battery room is worthy of special mention. The retardation coils and sending equipment for the selector circuits are mounted on shelves that are on a 30 degree angle with the horizontal. This enables the equipment to be readily seen and inspected. The shelves are on an angle iron framework of substantial construction. A motor-generator set furnishes the current for all the selector circuits, with a number of dry cells for emergency. If for any reason the generator should stop, the circuits are shifted over to the dry battery automatically. There is a relay in each circuit wired to the generator so that the line is connected to the generator as long as the relays are energized. Also each dispatcher has a key that does the same thing in case a fuse should blow. Another set of relays, controlled by keys on the dispatchers' tables, shift the dispatchers from the dispatcher's circuit to the message circuit in case of trouble on the former circuit.

There are circuits from each dispatcher's table into the chief dispatcher's office with lamp signals set in his table top, which are controlled by keys at the dispatchers' tables. This gives quick connection between the chief and his men.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Chicago Bell Ridicules Expert's Report.

The report of E. W. Bemis, telephone expert on the condition of the Chicago Telephone Co., ridiculed and criticised on a score of points by attorneys for the company whose rates the council committee on gas, oil, and electric light is endeaving to revise. They declare him "inconsistent," " in error," "arbitrary," "unreasonable," and "mistaken."

The committee has received the formal answer of the company to the Bemis report by Nathaniel T. Guernsey, one of the experts of the American Telephone & Telegraph Co. The aldermen were surprised by the severity of his arraignment of Bemis and continued the discussion until another day.

Among the company's declarations against the Bemis report and in answer to the assertion that its revenue can be reduced $700,000 a year without injustice, are the following:

"We confidently submit that this review is more than sufficient to demonstrate that his alleged surplus of $700,000 is purely fictitious and is the result of wholly unwarranted and inconsistent assumptions.

A sufficient depreciation allowance is as essential to unimpaired service as it is to unimpaired investment. We believe that when the radical and manifest errors and omissions of the report of Prof. Bemis are corrected. its effect is simply to corroborate the conclusions of his predecessors and to sustain the contention of the company that the present rates are unreasonably low and that any revision of them should be not downward but upward.

The telephone company deeply regrets the almost unsurmountable difference between Prof. Bemis' report and the position it is forced to take in justice to, and in protection of, the telephone property and the service to the public. It had hoped that Prof. Bemis would serve in the capacity of an umpire and would deal with fairness alike to the city and the subscribers on one side and the company on the other—rather than as an advocate of the former only."

Speaking of the rate of return allowed by Bemis the company alleged it was "unreasonably low."

"The character of the telephone business," it proceeded, "and the value of the service rendered require a minimum return of not less than 8 per cent. on the fair present value. Neither 6 per cent. nor 7 per cent. can be regarded as reasonable."

The communication of the company also announced that wage increases to be provided shortly will cost it $300,000 a year, and that the pension system announced recently will make an annual charge of $100,000 a year against its treasury.

The questions involved are now being argued before the committee, a matter which will doubtless continue several weeks.

Oppose Establishment of Illinois Utilities Commission.

The hearings being conducted in Chicago by the joint committee of the Illinois, legislature, appointed to investigate the question of establishing a state public utilities committee, have developed two facts this week. First, that the Chicago Bell is opposed to the formation of such a supervising body; second, that Mayor Harrison, of Chicago, is also opposed to any move which will take the control of the city's utilities out of its hands.

"I am opposed to the theory of the commission form of control," said E. L. Richardson, general counsel for the Chicago Telephone Co., to the committee.

"I admit that in practice it has worked out well in Wisconsin and other states, but we are opposed to it on the theory. We are trying—and in a general way successfully—to deal with the different municipalities and we think well enough should be left alone."

Mr. Richardson was subjected to a cross examination regarding the political aspect of the fights of the telephone company for franchises.

"Don't you think that it would be easier for every one concerned to take politics out of the question entirely?" he was asked.

"Certainly," replied Mr. Richardson, "but I am not in favor of this plan."

"But don't you find that politics enter largely into the decisions of men appointed for a short time by city councils or the like in matters of this kind?"

"I do, most assuredly," was the reply. "But we always have received a fair hearing."

Mayor Harrison made a formal demand that the state legislature keep its hands off Chicago's troubles with its public utility corporations. At the same time there was launched a plan for better local control of these utilities by the municipality.

The mayor sent to the council a resolution upon which he asked immediate action. The resolution urges that in the event a commission is found necessary, provision shall be made to give Chicago its own commission, appointed by the mayor, without reference to the rest of the state.

For the same reasons an order was presented directing the preparation of an ordinance creating a municipal bureau of public utilities. It provided that this organization be given full supervision over all the corporations now under the control of the council.

In his letter accompanying his resolution the mayor said he believed it expressed the sentiment of the entire city. He said in part:

"I have not attempted to discuss the desirability of the general scheme of a public utilities commission but have contented myself with a broad statement to the effect, first, that in the event a public utilities commission to have control of local public utilities is created, its membership shall be appointed by the mayor of Chicago, by and with the consent and approval of the city council.

Second. that no such law shall become effective in the city of Chicago until it shall have been submitted to a general referendum and shall have received the indorsement of a majority of the legal voters voting upon the question."

The resolution recited Chicago's development in control over the local transportation lines, the gas and telephone companies, and its ownership of the waterworks. It says, in part :

"The people of Chicago are firmly committed to the principle of the broadest measure of local self-government, commonly call 'home rule,' compatible with the proper conduct of the affairs of the sovereign state of Illinois, but more particularly in the control and regulation of those great public utilities mentioned.

No large city in America has accomplished more for its people in the regulation of such public utilities than Chicago.

There is no sentiment in Chicago for a change in governmental control of such public utilities, but, on the con-

trary, there now is and has been for some time past a demand that Chicago should have a special charter, with powers therein conferred commensurate with its needs and guaranteeing to it the privilege of 'home rule.'"

Wisconsin Commission Decisions.

The Wisconsin Railroad Commission has rendered a decision in the case of the Boscobel Telephone Co., of Boscobel, Wis., against eleven farmers' lines connecting with the Boscobel exchange. The Boscobel company, as petitioner, had been unable to reach an agreement with the other lines concerning the terms and conditions for a continuance of the physical connection. It asked the commission to fix reasonable conditions and compensation for physical connection and joint toll rates, and prescribe by whom the expenses of maintaining the connection should be paid. The commission decided:

"The applicant shall pay the cost of maintaining connections and of keeping up that portion of its property which is used entirely for the rural service. The rates for switching, as determined in this decision, are lower than have been obtained in some other cases, but so far as the facts indicate, what the rate should be, $1.50 per telephone per year, seems to be entirely reasonable. Bills for this service, in the case of companies having other connections, shall be rendered directly to the companies concerned."

The commission also decided the case of the Union Telephone Co., of Prairie du Chien, Wis., against three connecting lines. It ordered that the Union company make an annual charge $2.50 for "switching for all telephone users, on lines not owned by the applicant, who can call the Prairie du Chien central directly and who can be called directly from that central; that a tentative rate of three cents per call shall be established on all messages to or from Eastman and Bridgeport, or points on the respondent's lines beyond these centrals."

The decision is directed against the Western Crawford County Farmers' Mutual Telephone Co., the People's Telephone Co., and the Farmers' Telephone Co., of Lancaster,

Pioneer Asks Commission to Sustain Rates.

Formal application has been made to the Oklahoma Corporation Commission by the Pioneer Telephone Co. asking that the commission suspend its order No. 101, which contained a schedule of rates to be charged by the company to Oklahoma City subscribers. That order provided that the rates should be no more than $3.75 per month for individual business service, $3.15 for two-party business, $2 for individual residence, $1.80 for two-party residence and $1.75 for four-party semi-selective ringing.

The company contends that it can not make a reasonable profit under those rates and asks the commission to authorize the same increase in rates which was authorized by the city ordinance recently declared invalid by the supreme court of the state.

The schedule proposed by the company provides for a charge of $4.95 a month for individual business service, $4.15 for two-party selective business, $2.65 for individual residence, $2.40 for a two-party selective residence and $2.30 for four-party semi-selective ringing residence.

The commission declined to pass on the application until after it had disposed of the attorney general's motion to require the company to refund all charges in excess of the rates allowed under the commission's order. Both sides were requested to file briefs on the motion for refund.

Ohio Commission Demurs to Hamilton Home Petition.

The Ohio Public Service Commission, through Attorney General Hogan, has filed demurrers to the petitions of the Hamilton Home Telephone Co. The Home company sued to have the ruling of the commission, denying it permission to use the lines of the Bell company into Cincinnati, set aside. The commission held that it had no authority to order the Bell company to give the Home the use of its lines. The local concern then appealed to the courts. The Public Service Commission claims the facts stated in the petition do not constitute a cause of action against it.

One Exchange Unit of Service.

Members of the Nebraska Railway Commission are of the opinion that not much headway will be made in the control and readjustment of telephone rates in Nebraska until they can force or induce the companies to make one exchange the unit of exchange service and shall be covered by a toll charge that shall be remunerative and not burdensome.

This means that payment for service from one exchange confines the subscriber to that one exchange and that any outside connection, either in or out of the county, must be paid for. The fee will be small but should be levied in each case.

This, of course, is not covered by any order so far made by the commission, but it has made this finding: "That all service between exchanges should be uniformly covered by a toll charge and that an exchange charge should only cover the service rendered at a single exchange."

"The telephone companies complain rightfully," says Chairman Winnett, "that they are compelled to furnish, by reason of abuses, service for which they get no pay. Men who buy county rights, which means complete service, allow those who have no such right to use their names and telephones. In this way, many get what they don't pay for, while the toll lines erected to take care of this business between exchanges lie idle. Under the rule that we propose every subscriber will get what he pays for and the company get paid for what it is entitled to receive pay. If we don't bring about that result those who do pay for complete county service will have to pay increased rates because men who are not entitled to that service make use of it.

"As the various state commissions interpret their duties and responsibilities, they are organized for the purpose of instituting a square deal to the person buying service from the corporations and to the corporations who are selling that service. It is our business to impartially investigate and find out just what is the investment of a corporation upon which it is entitled to earn returns, and then to limit those returns to a reasonable figure."

Commission Temporarily Sustains Rate Increase.

The New Jersey Public Utility Commission has refused the application of the Trenton Chamber of Commerce for an order temporarily suspending the proposed increase of rates by the Delaware & Atlantic Telephone & Telegraph Co.

In doing so the commission pointed out that ordinarily such an application comes to its attention without any specific knowledge on its part of the particular circumstances in which the increase is made. Ordinarily, too, an increase of rates has the effect of raising rates uniformly to all consumers or subscribers in the same class.

It pointed out that, in both these particulars, the present case offers a contrast. In the Camden investigation, which included all the territory served by the same company, the commission had already heard sufficient evidence to rebut, in its judgment, the ordinary presumption in favor of the established rate.

It also pointed out that the increase in this case will only serve to place Trenton on a parity with Camden and

(*Continued on page* 847.)

Cornerning the Retail Christmas Trade by Telephone

How One Enterprising Merchant Planned and Executed a Selling Campaign Just Before the Holiday, Which Resulted in Bringing in a Large Number of Interested Customers—An Entertaining Fiction Which Is Founded on Fact

By Felix J. Koch

It was just at that convenient time of the evening when the family was gathered at dinner, having just completed a comforting meal. It was too early to leave for theater, opera, lecture or call; too early for callers to usurp some of the gathering in the parlor; too early for the others to have gone upstairs to their lessons. That meant that whatever was announced by whoever answered the telephone would be heard by all; where all would participate in the discussion which would follow; where all who had money to spend (as who hasn't, at Christmas-time?), would have their attention directed to this place for spending it.

As stated, it was then that the telephone rang.

Jane answered, obviously. Jane had the eldest daughter's right to answer the telephone for it was possible, quite probable, that it would be Jack. Jack had a happy faculty of calling up Jane every evening about this time. Instead, though, the assembled family heard a conversation which, stenographically, might have been reported from their end of the line as follows:

"Hello!"

"Yes, this is Jackson's."

Then a long, long interruption.

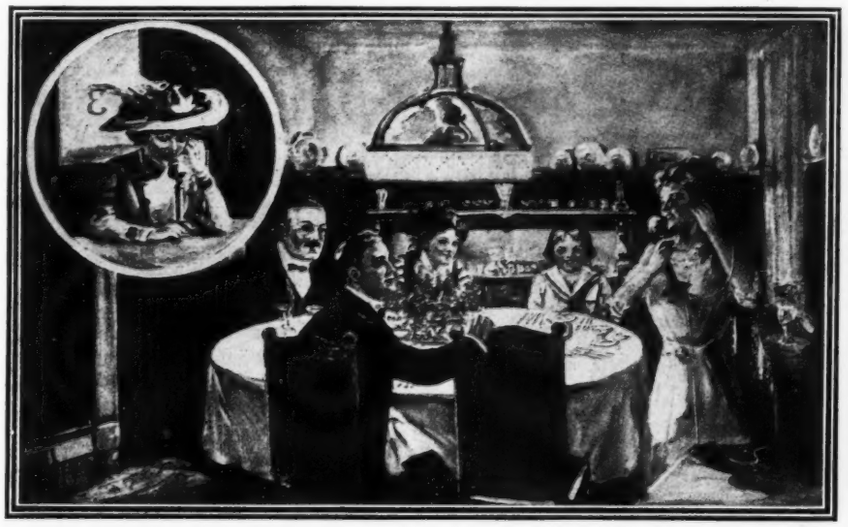
Finally—

"Why you must have the wrong Jackson."

A moment's silence, and then:

"Oh that's all right! I hope you find your party. Goodby!"

Whereupon Jane comes back, her face bubbling with laughter, to tell the rest of them.



"It Was Just at Dinner Time."

"Funniest thing in the world. A lady at the other end wanted to speak to some other Jackson family, which has just moved to the city.

"So, without giving me a moment's chance to break in she told me to be sure and meet her at Pogue's to-morrow afternoon, and to bring the children. We could let them go through the book department and the toy department and get an idea as to what they might want for Christmas. Then I must help her choose her dress and we could buy some knick-knacks together, and she'd treat the crowd of us to lunch,—the special fifty-cent lunch, up in the restaurant on the third floor.

"We couldn't afford to miss it, she said, over and over, for tonight's papers had an advertisement of the most record-breaking bargains in everything imaginable advertised for Pogue's tomorrow and the two days after that she'd ever heard of.

"She proceeded to tell me she couldn't imagine how they could sell real Blackmore's shoes at $2.59, and that the chance for cheap groceries was ridiculously low, in view of the fact that the pure food laws would see to it that the goods were as stated."

"She was one of those terrifically fast talkers,—you know them," and she smiled at Edward, whose pet aversion was a girl of just that sort in their set, "and before I got a word in edge-wise she'd about told me of everything there was to be bought."

They laughed, but mother took the cue instantly.

"Father, let's see what Pogue is advertising this week. You know I've rather preferred Mancy's or Ward & Sons', but so many people seem to find just what they want at Pogue's I believe I'll try them."

"I need shoes, Mother, "Cora whispered, "and if they've such a bargain, can't I get them now?"

Estelle put her arms around father; mention of the shoes had brought a suggestion.

"Dad, I'll be fifteen Sunday. And I do want the Alcott books!"

Mother at that moment was scanning the advertisement. It was indeed attractive, so much so we quote in part:

WHAT YOU NEED.
Aprons
Albums
WHAT YOU WANT.
Aquariums
Blotting pads
WHAT YOU'LL GIVE.
Art goods
Cameras

and so on—a long, long line, alphabetically arranged and, next to each, the usual selling price and then the bargain price. None of the useless verbiage about everything new for the holidays; none of the spread-eagleism about "best and freshest," but just these columns of figures and, every so often, a neat little cut.

For example, when Mother saw the new style mission bird cage, her heart was set on it at once, and Bob, who had resolved he didn't know what give Mother this year, changed his mind to a resolution then and there. When Billy saw that one could get a camera for a dollar, Billy knew that the brand new bill he'd earned doing errands for brother wouldn't go for a seat at the theater, but into a Kodak instead.

What was more, there were combinations that were interesting. Just for example:

CLUB TOGETHER AND BUY BROTHER:

A cane; a shoe-order; a glove-order; a spy-glass; a suit-case; a silver-plated brush and comb; a set of Thackery. Total .....$——

Prices on these arti-

CLUB TOGETHER AND BUY DAD AND MOTHER:

A new sitting room chair; a lawn-mower; an electric-cleaner; an attractive jardiniere; a tidy; a pair of slippers for each. Total .....$——

Prices on these arti-

cles if bought separately .....$——

Difference .....$——
You save this between you. Divide it among the purchasers, or use it on your joint-gift.

cles if bought separately .....$——

Difference .....$——
You save this between you. Divide it among the purchasers, or use it on your joint-gift.

The idea was indeed such a clever one it aroused no end of discussion.

"Look here, John," mother said, as she read the combination, "'To Give the Newly Weds.' We could get that combination for Alice and Tom. They already have a tabourette and we could send that over to Will's wife. Then instead

"That Meant 120,000 Persons Actually Reached."

of the glove-order for each, we can give the pairs of gloves to the mail man and to the colored woman who does the odd jobs. This will provide for them nicely and, see, it'll leave that picture for the young folks, and those two maple chairs, and the bed-spread, and the combination cigar and card-case. I think that'll be fine."

"That's a good idea," came from Jane, "that giving the prices, too. You don't have to walk in and ask 'How much is so-and-so?' and then feel sheepish and say it's too much and walk out."

The more they discussed the advertisement, the oftener they read it; the more they found in it.

When Jimmy came to call on Jane they also discussed it. In short they had read it, end to end, and were already half-way buyers.

What occurred there at Jackson's, although of course, they didn't know it, was occurring at that self-same hour in every home worth the bothering with, according to Dun and Bradstreet, within shopping-distance of Pogue's. Long before Pogue had made an arrangement with the telephone company, and, failing that, had arranged with corner drug-stores, operating public telephones, where the more calls made the better, with telephones in office buildings, whose tenants had left at five or six, not to return till morning, and where janitors and washerwomen had pass keys to the offices, so that he had a hundred girls at a hundred different stations.

The list of people worth while had been received alphabetically from the mercantile agencies, who always have these on file. It was divided alphabetically into one hundred parts, and each girl received twenty names.

Twenty names means two thousand families. Counting the parents, three children and the servants, who were bound to hear of it sooner or later, there were six persons reached in each home. That meant, roughly speaking, 120,000 persons actually reached by word of mouth inside of two hours' conversation. Those people, in turn, would tell other people that evening, or on their way to the store to buy, or again after buying and continuing the shopping excursion elsewhere.

Each of the girls had before her a printed formula, word for word, almost, that which the one had read off to Miss Jackson. By and by, of course, a girl came to know it by heart, or improvised on it, but basically it was the same.

When a man answered the telephone she asked for his wife. If he said he hadn't any, then she went on:

"Oh then you're the other Mr. Jones," or Brown, or whatever his name was. And without giving him a chance to say he had no sister, she proceeded to tell him to tell his sister that they would go down to look at those canes and ties and men's shirt bargains that Pogue was advertising, etc. When she got through, only to be chagrined with the information that he had no sister, she had done the good work of putting the "tip" in his ear that Pogue was advertising tremendous bargains in things men always need. Did it pay?

Pogue himself says it has never been equalled in experience. The cost was so little when compared to newspaper advertising, circulars and the like. The hundred girls were obtained from a shoe factory, and came direct from their work there to their respective telephones.

They were only too glad to work two hours extra, being empanelled from six to eight only, the more that for this they received twice their regular two hours' pay.

Through a gift of a twenty-five dollar merchandise order to the superintendent of the shoe factory, Pogue had induced him to ask all the girls who wished to earn this extra money to stay a few moments at the close of that day's work. All assembled, Pogue's agent explained the scheme, pledged them to secrecy and not naming his concern as yet, lest the story leak from them, engaged them and put them through a drill.

The telephones were found through the aid of a private policeman, who knew scrubwomen, corner druggists and janitors galore, and who received a ten-dollar merchandise order for his share.

The printing of the slips to be read the girls was a mere figment; two or three dollars, while the newspaper advertisement in the paper that night, and next morning and evening were no larger than Pogue ordinarily would have inserted.

[EDITOR'S NOTE: The illustrations for this article are reproduced from postal cards issued by the A. T. & T. Co.]

Big Expansion at Erie, Pa.

At a recent meeting of the stockholders of the Mutual Telephone Co., of Erie, Pa., it was decided to increase the capitalization of the company to $1,000,000. This is a preliminary step toward making considerable extensions to the system.

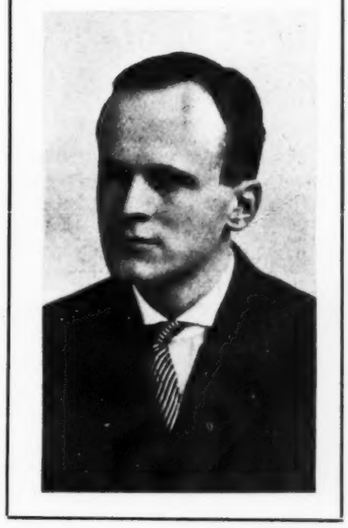
A switchboard has been ordered for a branch exchange at Wesleyville, four miles from Erie, toward which the city proper is rapidly extending. The new plant of the General Electric Co., which covers nearly 1,000 acres, is located near Wesleyville, and the development in that neighborhood will be extensive.

A Quartet of Men Prominent in the Telephone Field

J. L. W. ZIETLOW, president of the Dakota Central Telephone Co., with headquarters at Aberdeen, S. D., was born in the province of Pomerania, Germany, December 8, 1850, coming to this country when eighteen years of age. He learned the watchmaker's and machinist's trades in Germany and followed both, as well as farming, in the United States. In 1886 he organized the Dakota Emmer Telephone Co. and took it over himself the following year. He was also manager of the Aberdeen Telephone Co., organized in 1886. In 1896 Mr. Zietlow began to branch out and build toll lines throughout the state, until he had 600 miles of lines. The Dakota Central Telephone Co. was organized about 1898 and reorganized in 1904, taking in a number of other companies, including the Western Dakota Telephone Co. and the Central Dakota Telephone Co. Mr. Zietlow may, therefore, be fairly regarded as one of the pioneers of the telephone business, particularly in the Middle West. He is a member of the Aberdeen Commercial Club, the B. P. O. E., the I. O. O. F., the A. O. U. W., the Maccabees and the U. C. T.

HARRY VERNON WORTH, superintendent and buyer for the Crawford Cedar Co., Menominee, Wis., has been in the lumber and timber business since he was fourteen years of age, at which time his schooling ceased. He was then in the seventh grade in the Au Sable High School. He then began work in a sawmill, following that line for several years. About 1893 he started in the cedar business as inspector and scaler for H. M. Land's Sons Co. He left the employ of this concern about 1900 to go with Raber & Watson, at Menominee, as inspector, yard foreman and manager of the Menominee office. In August, 1909, the Crawford Cedar Co. bought out the business of Raber & Watson and Mr. Worth went with the Crawford company as superintendent and buyer, which position he still holds. He is recognized by the trade as an expert in his line. Mr. Worth is a member of the Knights of Pythias and of the Menominee Commercial Club. He was born in Rochester, N. Y., May 13, 1872. The Crawford company's specialty in the telephone field, "Crawford" cedar poles, is widely known.

EDWARD IRVING PRATT, advertising manager for the Kellogg Switchboard & Supply Co., Chicago, Ill., was born in Milwaukee, Wis., July 2, 1878. He was educated in the grade and high schools of that city, also attending the Shattuck School, at Faribault, Minn. Completing his schooling in 1900, he entered the newspaper field and for five years occupied himself in various departments of that work, advertising, reportorial and editorial. In 1905 he took charge of the publicity and promotion department of the Kellogg company. He has entire supervision of the preparation of advertising copy, issuance of bulletins, editing of the company's house paper, "Telephone Facts," etc. During the 1912 convention of the National association, held in February, in Chicago, this paper, "Telephone Facts," came out in daily edition, reporting all occurrences of interest to the delegates and the exhibitors, an instance of journalistic accomplishment which was widely commended. Mr. Pratt is a member of the Chicago Advertising Association and of the Aero Club of Illinois.



RAYMOND BISSELL, assistant to the president (B. G Hubbell) of the Federal Telephone & Telegraph Co., with headquarters in Buffalo, N. Y., was born in Buffalo, October 26, 1880. He was educated in the grade and high schools of his native city and then attended Yale University, from which latter he graduated in 1902. In 1904 he associated himself with the Federal Telephone & Telegraph Co. in the capacity of solicitor, and has remained in the employ of that corporation ever since. Mr. Bissell has worked his way through various departments of the company, his promotions coming steadily, until he was made assistant to the president, which position he now holds. Prior to engaging with the Federal company, he was, for thirteen months, in the office of the Niagara Radiator Co. This was his only employment outside the telephone field. It is, therefore, to be presumed that the Federal company stands to him as about the best institution on earth. Mr. Bissell is a member of the Park Club, the Buffalo Club, the Saturn Club and the Ellicott Club, in Buffalo.

Abstract of Report on Situation of Chicago Bell

An Investigation Made for the Chicago City Council Committee on Gas, Oil and Electric Light to Furnish Data Upon Which to Base New Telephone Rates for Five Year Period, as Prescribed by City Ordinance—Fourth Installment

By Prof. Edward W. Bemis

Early Profits.

In 1881, the first year of the company's history, no dividends were paid. From that time until 1908 the dividends were never less than 10 per cent. They were reduced to 8 per cent. in 1908 and have been of that amount since then; but the reduction from 10 per cent. to 8 per cent. was accompanied by an increase of stock out of earnings from $22,500,000 to $27,000,000. The actual dividend, thus, on the stock representing any cash contribution from the stockholders, scarcely declined at all.

In other words, the dividends now paid of $2,160,000 on $27,000,000 of stock represent 9.6 per cent. on the $22,500,0000 worth of stock outstanding at the close of 1907, before the capitalization of surplus earnings.

It is interesting to observe that had the stockholders been content with 10 per cent. on their actual contributions from the start, and had they been further content to pay off the stock out of earnings in excess of 10 per cent. on their outstanding stock when there were such earnings, the stock would have all been redeemed and all the extensions would have been paid for out of earnings on January 1, 1912, with the exception of $5,000,000 of bonded debt.

The method of computing this may be illustrated by the first three years of the company. In 1881, when no dividends were paid on the $500,000 of stock, 10 per cent. allowance, or $50,000, would on this theory be added, making the claim of the stockholders $550,000 on January 1, 1882. Ten per cent. on this, or $55,000, that year would raise the claim to $605,000, less the dividends actually paid of $148,000. This leaves the net claim against the public on this theory of $457,000.

In 1883 an allowance of 10 per cent. on this, together with $100,000 of new stock for money put into the plant, makes the total claim $602,700 less $220,000 actually paid in dividends, or a net claim December 31, 1911, of $382,700. In this way the property would have all been paid for by 1887 and no stock would have been needed again until 1901, and that stock would have finally been canceled with 10 per cent. thereon before January 1, 1912.

These computations are not given here for anything more than an illustration of the profitableness of the business. It is only under municipal ownership, when well managed, that profits above 4 per cent. to 5 per cent. interest on the bonded debt are devoted to retiring the debt and thus decapitalizing the business.

The total dividends paid by the Chicago Telephone Co., from 1881 to the close of 1907, when the present ordinance went into effect, were $16,951,765. This was an average of 12.66 per cent. of the sum of the average outstanding stock of the several years. Had the addition of $1,000,000 to the stock in 1900, without any direct payment therefor by the stockholders, been omitted from the calculation of average stock outstanding, the dividends would have averaged over 13 per cent.

Description.	City.	City and Suburban.
Rejected working capital	$ 168,989	$ 221,596
Rejected paving	628,262	628,262
Rejected overhead	1,268,696	1,757,684
Total rejected	$ 2,065,947	$ 2,607,542
Appraisal new	34,325,894	44,898,103
Value new less rejected items	32,259,947	42,290,561

Table No. 12. Appraisal of Physical Property and Rejected Items.

The rejection of the items of plant development and the cost of developing the business reduces the appraisal of the physical property new to:

City and suburban property $42,290,562
City property only 32,259,947

The rejected paving item of $628,216, laid since the conduits were put in, belongs entirely to the city portion of the plant. The rejected part of the working capital has been apportioned to the city in the same percentage of the whole (72.26 per cent.) as is the proportion of the entire city property, aside from cash and its equivalent, to the total.

Description.	Byllesby and Arnold		Chicago Commission.	Westinghouse, Church, Kerr & Co.	E. L. Cline, Telephony, July 2, 1910.
	b Due to age and wear and tear only.	a Due to all forms of depreciation.			
	Years.	Years.	Years.	Years.	Years.
Buildings	60 to 100	30 to 60	40	50	50
Central office equipment	25	16 2-3	8	15	10
Private branch boards	15 to 20	12 to 15	8	10	10
Substation apparatus	20	15	10	10	10
Clay conduit lines	Indefinite	50	50	50	Unknown
Underground cable, main and toll	50	18	20	20	25
Underground cable subsidiary	35	14	15		20
Aerial cable	25	12.5	15	17.5	15
Poles and cross-arms	18	10 to 14	10	15	10 to 19
Copper wire, long distance and toll lines	25	15	40	40	15
Copper wire exchange lines	20	15	30	20	15

Table No. 13. Life of Telephone Plant.

Present Value.

The last two of the nine large volumes of the appraisal are devoted to the determination of the present or depreciated value of the physical property. No depreciation is recognized in the items of "plant development" and "cost of developing the business."

Following a common practice, no depreciation is found in land or construction in process, or such part of the working capital as is represented by cash or fluid assets readily convertible into cash. The other 90 per cent. of the physical property is depreciated by the appraisers 77.28 per cent. in the city and 76 per cent. in the entire system. The method taken may be briefly examined.

Life.

The appraisal gives two columns of estimated life. In one column, known as *b*, the appraisers take an estimated life for each portion of the property based on its probable duration, if affected only by wear and not at all by obsolescence or inadequacy, or other causes. In the second column, known as *a*, they take a shorter estimated life, based on conditions of obsolescence, inadequacy, etc., which have been observed in Chicago and similar large cities. Column *b* is called a life "due to age and wear only," and column *a* is called a life "due to service." In the table following, No. 13, three columns are added to include the estimates of the Chicago Telephone Commission, of D. C. Jackson, Wm. H. Crumb and Geo. W. Wilder.

in April, 1907; the estimates of Westinghouse, Church, Kerr & Co., in their report in March, 1911, and the estimates of E. L. Cline, in TELEPHONY, July 2, 1910.

It will be observed that Byllesby and Arnold in column *a* assumed a longer life for central office and sub-station equipment and a shorter life for conduits and cable than do the others.

Description.	Byllesby and Arnold		Chicago Telephone Commission.	Westinghouse, Church, Kerr & Co.	E. L. Cline.
	b Age and wear only	a All forms of depreciation.			
Buildings	0	0	0	0	0
Central office equipment	5	12	20	20	20
Central battery					
Private branch boards	0	10 5	20	15	20
Substation apparatus	0	10.5	10	15	
City conduits	0	0	0	0	0
Underground cable main	1 to 37	35.2	40	40	40
Underground cable subsidiary	0 to 39	10.4	40	40	40
Aerial cable	2 to 35	19.7	40	30	40
Poles and cross-arms	0	0	0	0	0 to 20
Copper wire	40	45	70	50	70

Table No. 14. Salvage Values.

Byllesby and Arnold estimated less net salvage (column *a*) than do others. The net salvage allowed on some parts of the property are here given:

Sub-station equipment ..... 10.46 per cent.
Underground cables, mains ..... 35.67 per cent.
Underground cable, subsidiary ..... 9.57 per cent.
House cable ..... 4.55 per cent.
Aerial cable ..... 19.54 per cent.
Aerial wire ..... 29.32 per cent.

Byllesby and Arnold estimate (column *a*) less depreciation yearly on central and sub-station equipment and more depreciation on underground and aerial construction than do the others (Table No. 15).

Applying the above percentages of depreciation, based on the age, salvage and assumed life of the several parts of the telephone property, the appraisers reached the results given in Table No. 16.

According to the books of the company, the total cost of the property in the city and suburbs on August 1, 1911, amounted to $36,852,122.15, or, with a proper allowance for cash and its equivalent, about $37,700,000. From this, however, $417,871.38 should be deducted for property that was scrapped before December 31, 1911, or more properly the $364,778.41 scrapped before August 1, 1911, which, by an oversight, was not noted in the books (Hall's report, page 14). This would leave the cost, according to the books, about $37,300,000. The present value of this property would be determined by deducting the amount at the credit of the depreciation reserve August 1, 1911. The addition to the reserve for the year 1911 was slightly over $1,200,000, or approximately $700,000 for the seven months. This added to the $3,700,000, December 31, 1910, gives $4,400,000 contributed by the telephone users up to August 1, 1911. The present value, according to the books, is therefore $32,900,000, which confirms the value found below from the appraisal, viz., $32,813,246.

Description.	Byllesby and Arnold		Chicago Telephone Company, Sinking Fund.	Westinghouse Church Kerr & Co.	E. L. Cline.
	b Age and wear only.	a All forms of depreciation.			
Buildings	1 to 2	1.5 to 2	1.33	2.0	2
Central office equipment	3.8	6.00	11.25	5.3	8
Private branch boards	5.0	6.67	11.25		8
Sub-station apparatus	5.0	6.67	8.73	8 5	
Clay conduit lines	0.0	2.00	.89	2.0	1
Underground cable	1.26 to 1.98	5.50	3.72	3.0	2.4
Underground cable subsidiary	2.03 to 2.85	7.00	5.38		3
Aerial cable	2.60 to 3.92	8.00	5.38	4.0	4
Poles and cross arms	4.16 to 5.55	6.66	8.73	6.6	4.2 to 11.25
Copper wire	2.4	6.50	5.38	2.5	2

Table No. 15. Annual Depreciation, Percentage of Cost.

If we apply to the appraisal new less the items rejected in the present report, the same percentages of depreciation as were used by Byllesby and Arnold for all items, namely, 20.97 per cent. for the city and 22.41 per cent. for city and suburbs, the present value of the conceded items of the appraisal new of $32,259,947 within the city and $42,290,561 in the city and suburbs will be:

Conceded present value in city.....$25,495,036
Conceded present value in city and suburbs.. 32,813,246

It also appears that the corrected present value for the entire property to August 1st, of $32,813,246, is nearly equal to the $33,000,000 of stocks, bonds and loans from the banks on December 31, 1911. By that date, however, the addition of $2,095,270 to the physical property during the last five months of 1911, brought the value of the physical property on the above basis to $34,908,516, or in round figures, $35,000,000. This is $2,000,000 more than the investment by the stock and bond holders and the banks on the date in question, December 31, 1911, and is substantially equivalent to the non-interest bearing liabilities.

Possibly a more exhaustive examination of the appraisal might make such further reductions as to bring the value on December 31 down to $33,000,000. On the other hand, the company might succeed in showing that too much has been rejected in the above computations.

The important point in this particular matter is that through the rise of land values, the increase in the cost of labor and materials and the investment of reserves of $5,091,000 collected from the telephone users, the plant on December 31, 1911, was worth about $2,000,000 more than the outstanding stocks, bonds and obligations to the banks. These three items, aggregating $33,000,000, represent the investment of capital in the company.

Description.	City.	City and Suburbs.
Total reproduction value new, including land and working capital	$34,325,894	$44,898,103
Present value "b" on the basis of age and wear only.	29,838,803	38,201,873
Percentage to value new	86.58%	84.73%
Present value "a" on the basis of obsolescence and inadequacy and other conditions of actual service in Chicago	27,312,425	35,073,692
Percentage to value new	79.03%	77.59%

Table No. 16. Depreciated or Present Value.

Prior to 1891 the dividend rate was always 30 per cent. to 51 per cent. During that time $494,352 of new stock was subscribed for from the dividend, or was allotted to the stockholder simultaneously with the payment of the dividends. Stock dividends of $1,000,000 in 1900, and of $4,500,000 in 1908, were issued to represent surplus earnings that have gone into the plant, in addition to the regular dividends which, prior to 1908, had never been under 10 per cent. Since these stock dividends of about $6,000,000 out of the existing $27,000,000 of stock represented actual investment in the property, even though paid for by the telephone user, the present stock, as well as the bonds, represents actual capital rather than what is usually meant by "water."

The question of how the capital was secured has more importance when the present 8 per cent. dividend rate is considered.

In addition to expenditures for maintenance that have gradually declined from 10 per cent. to 7.4 per cent. of the average depreciable investment, $5,000,000 appears to have been necessary to keep the investment intact through the past 20 and more years. This, however, is far from establishing the propriety of collecting over 40 per cent. of this, or $2,241,141, during 1910 and 1911. The fact appears to have been that substantially all the surplus earnings above 8 per cent. on the

stock during the past two years were added to the surplus. It was legal, and it may have been a wise and proper atonement for the neglect to do this in the past, or for transferring from reserve to surplus and distributing, as a stock dividend, in 1908, $4,500,000 previously accumulated to meet depreciation.

The actual treatment of the subject on the books of the company was not sufficiently scientific to be a guide in adjusting rates for the next five years.

Depreciation in New and Old Plants.

In a new plant which has not yet reached its "gait" of renewals, a depreciation reserve appears desirable. In the case of a company as old as the Chicago Telephone Co., the time may soon arrive when renewals will take sufficient care of depreciation, as in the case of our older gas companies and railroads.

A depreciation reserve has thus far been needed by the Chicago Telephone Co.

Methods of Building Up Depreciation Reserve.

Where, as is usual in telephone companies, a depreciation reserve is invested in the plant itself, there are two methods of determining the amount needed from year to year to reach the fixed amount at the end of a definite period. Both methods start with an assumption of the probable life and of the value new of each class of property that is subject to depreciation. The sinking fund method shows what percentage new must be put into a fund at an agreed rate of interest, usually 4 per cent., in order, when compounded, to reach the full value at the end of the estimated life of the property.

Of course, the only loss to be made up by the sinking fund is the difference between the cost new and the net salvage. By net salvage is meant the value of the property when scrapped, less the cost of its removal and sale.

Having thus determined the percentage of depreciation to be applied in any given year to each class of property, the amount of depreciation in dollars is computed. Then the addition of these various sums required for the sinking fund gives the total amount to be apportioned that year to the depreciation reserve. This amount will vary from year to year and is a complicated method to apply to the bookkeeping of the past. It is of easier application when applied to the property today as an estimate for the future. In the case of the Chicago Telephone Co., the appraisal just made shows that the actual excess of depreciation over appreciation in the past thirty years has been about $5,000,000. One can determine what uniform per cent. of the average investment of all the depreciable property would have been necessary within the last 21 years, in order to reach at 4 per cent. compound interest this $5,000,000.

One per cent. yearly on the average depreciable investment since 1890 at 4 per cent. would have yielded $3,465,860.91 in 1911. To have secured $4,000,000 by this method would have required 1.151 per cent.; to have secured the actual amount accumulated, of $5,091,000, would have required 1.469 per cent. The other method of reckoning the depreciation, one apparently in universal use among telephone engineers, is the so-called straight line method, where interest and the compounding of the same is disregarded. The difference between the cost of the property and the net salvage, in other words, the true depreciation, is equally divided by years over the assumed life of the class of property in question. The amount yielded in this way by 1 per cent. yearly of the average depreciable property of the Chicago Telephone Co. since 1890 is $2,731,977. To accumulate $4,000,000 in 1911 by this method would, therefore, require 1.464 per cent. a year. To accumulate $5,091,000 would require 1.8635 per cent. A yearly addition to the reserve of 1.5 per cent. would yield $4,097,966. A yearly addition of 1.86 per cent. would yield $5,081,477. If the first method, or sinking fund, is applied to the past history of the plant, the rate of return must be reckoned upon the first cost new of the property in use.

If, however, the second or straight line method be used, the rate of return but not the depreciation should be reckoned from year to year on the depreciated value of the property. An illustration will make this latter point clear. Suppose the property cost new $100,000, and that 7 per cent. be assumed as a fair return on the investment, but let it be further assumed that the property will last only 33⅓ years, and therefore will require 3 per cent., or $3,000 a year, without interest, to make good the depreciation. Besides enough for operating expenses, the users pay $10,000 to the company the first year. Of this amount, $7,000 is profit and $3,000 makes good the depreciation.

If the company is a growing one, it will need even more than $3,000 for extensions, which it will pay for, in part with the above $3,000 furnished by its customers, and in part through further stock and bond issues. If $4,000 were needed for extensions during the first year and $3,000 were paid in by the customer, the real capital at the beginning of the second year would be $101,000. If no addition to the investment were required, the capital would be $97,000, and the company would have $3,000 to put into similar investments elsewhere. If the company could not get 7 per cent. elsewhere, that would indicate that the rate of return to the company in question had been put too high, since the rate of return should represent, as nearly as possible, what investors demand and get in similar investments under similar conditions. The objection may be raised that if the property were a stagnant one the rate of return each year, say 7 per cent., would be on a reduced capital and therefore the rates would fall as compared with a new investment of similar character elsewhere. This is of slight importance, because the problem is the determining of what is just in each community.

Under this theory, of course, if a stagnant plant begins to grow rapidly, and a large amount of new capital were called in, or if the plant were entirely rebuilt, there might have to be a temporary increase of rates, but that, under a system of public regulations and publicity of accounts, could be allowed. Such suppositions, however, of stagnant plants, have little application to most municipal utilities and no application to the Chicago Telephone Co.

In the case of the latter company, another argument is raised. This plant for the present may be assumed to have cost the security holders, that is the stock, bond and note holders, $33,000,000, and to have cost the telephone subscriber $5,000,000 for a depreciation reserve.

The company claims that it has had the burden of investing and caring for this $5,000,000 of depreciation reserve, which has been put into extensions, and should have a reward for the same. To this it should be replied, first, the salaries of all the officials and managers who supervised these extensions have been paid out of operating expenses and will be so paid in the future. Second, the security to the stockholders has been increased by this depreciation reserve collected from the subscriber and put into extensions. Third, if the depreciation reserve had been placed in an outside sinking fund, the owners of the property would have had to put their hands into their pockets for the extensions which have been paid for by the subscribers, while the total value of the telephone property would not have been changed thereby, and the investment in the sinking fund would have been scarcely more secure than the investment actually made in extensions. The straight line method will be followed in this report, and the yearly depreciation will be taken from the cost new of the depreciable investment.

Maintenance and Depreciation in Other Bell Companies

The experience of the entire group of Bell companies with

(*Continued on page* 848.)

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21—Care of Common Battery Equipment—Subscribers Sets for a New Magneto System

By H. R. Van Deventer

A careful watch must be kept on the common battery switchboard. The troubleman must be observant and willing to investigate little troubles which might be passed over in a magneto exchange. For instance, electrolysis, or the corrosion of certain parts of the apparatus or terminals may take place when the common battery system is used, while with magneto equipment it may never occur.

Such trouble usually manifests itself by a white or greenish deposit on and around cable box terminals, fuses, apparatus terminals, especially where German silver and fiber are in contact, in plug terminals, etc., current being always present, this corrosion grows, and soon causes trouble which becomes serious under certain conditions. The troubleman must always be on the outlook for such conditions, so that the proper remedy may be applied in time. In a magneto exchange, as long as the apparatus looks and works satisfactorily, there is little reason to suspect trouble. With the common battery there may be actions going on, from which, if not located and remedied, serious damage will result.

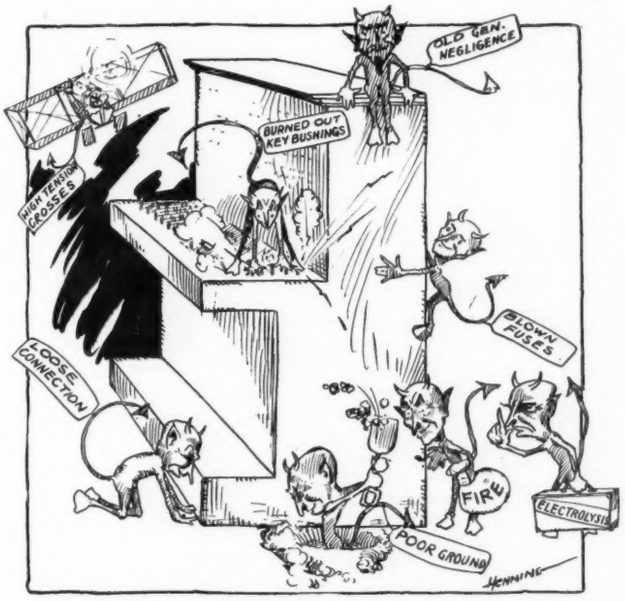
The man in charge must be of strong enough character not to substitute wire for fuses. In a magneto exchange if wire is used for fuse purposes, nothing will happen until some outside trouble throws current on the apparatus, a remote possibility. With the common battery system the current is always waiting, waiting to get through some defective winding or cord to start a fire. If improperly fused, relay windings may get so hot as to permanently warp the spool heads and mountings, and permanently damage the apparatus.

There are many reasons why more care and watchfulness are necessary when using common battery. Sufficient has been said to draw attention to these facts, and to indicate that the problem is more than a mere determination of the best system from a service standpoint and the initial difference in cost. It is not intended to depreciate in any way the merits of the common battery system. Without it, the operation of large exchanges would be almost an impossibility. Consider what it would mean in New York or Chicago to have two dry cells to each telephone. It is doubtful if 300 wagons with two men to each, working every day in the year could properly maintain all these cells. The expense would be enormous, to say nothing of the transmission efficiency, which would be very low on most of the lines which are used many times a day.

Then there would be generator trouble. While with modern apparatus this is reduced to a minimum, it still exists, and care must be taken of it. So the common battery system has its field, and it has been a solution of some of the most perplexing problems in the telephone art. Consider well, however, before installing it in a small exchange, especially as there must be some country lines and provision must be made for them.

In closing this preliminary discussion, it is well to state that no battery except the storage, is available for common battery exchange operation. Primary batteries of all types, require renewal so often as to make their maintenance cost prohibitive, to say nothing of the variation in current and voltage that takes place as they become exhausted.

In the early days there were boards developed with high resistance apparatus which were said to work satisfactorily with dry cells, using a voltage of 48 or more. Such equipment never came into extensive use, although for private branch exchange work it has been used to some extent. While there might be an exchange small enough



Careful Watch Must Be Kept to Keep These Out.

to be operated economically on dry cells, the constant watchfulness necessary to secure a high class service makes this method undesirable.

It is interesting to note, however, what has been done along this line. At 22 volts, 18 new cells in series are required. The number of sets of 18 cells each, to be connected across the bus bars of the board depends upon the number of lines is as follows:

No. of lines.	No. of sets of 18 cells each.	Total No. of cells.
50	2	36
100	3	54
200	5	90
250	6	108
300	7	126
400	9	162
500	11	198

These batteries should be maintained in duplicate, each set being used on alternate days.

The entire battery must be tested once a week, each series of 18 cells being tested separately. When the voltage is found to be less than 22, each cell in the series should be tested, and any measuring less than .8 volt should be replaced.

Another type of equipment uses one set of 22 cells for every 4 cord circuits, and one set of 22 cells for each 40 lines. This is a 22 volt system. A 40 volt system uses instead 36 cells for the four cords, and 36 cells for each 40 lines.

No data is available as to the maintenance costs of such dry cell outfits. It is, however, at least four to ten times what a storage battery plant would cost. This method of

current supply should only be employed in certain special cases after the matter is fully discussed with the apparatus manufacturer or a competent engineer.

In deciding upon the system to be initially installed, it is well to remember that with modern apparatus, it is comparatively easy to change from magneto to common battery. This was made possible, first, by the perfection of the direct current receiver whereby the induction coil was eliminated from the telephone set, and secondly, by the advent of the so-called "convertible" switchboard apparatus.

There are cases where it pays to install convertible equipment in the beginning. The future growth of the town may be uncertain, or circumstances such that the initial installation might well be for only a hundred lines or so. But, when a railroad is built or some other factor enters in to promote the growth of the town, several hundred lines will be necessary. In these cases, it is well to know, in a general way, what changes will be needed when the expansion of the system is required. The initial equipment, therefore, should be purchased with this end in view.

Factors in Determining Type of Subscribers' Sets.

In deciding upon the subscribers' instruments, there are three courses which may be followed that permit changing from the magneto to the common battery system. They are: (a) to install magneto instruments and replace them with common battery sets when the change is made; (b) to place in stock a few new common battery instruments which can be installed in place of a like number of magneto sets. Parts can be then taken from the magneto sets and installed in new cabinets; (c) the magneto instruments may be rewired. In doing this the same cabinet is used but the circuits are changed. Some parts are eliminated and others added.

The first method (a) is only feasible when there is an outlet for the old instruments. If they can be used in the country or sold at a reasonable price, this method is a good one. It insures entire new instrument equipment of the highest efficiency, and the psychological effect on the subscribers is favorable especially where an increase in rates is coincident with the change in system, as is often the case.

It is difficult to exchange magneto instruments for common battery sets as the instrument manufacturers do not want old telephones. It costs more to disassemble the sets, refinish the parts and then assemble them, than they are worth. While perfectly serviceable, these instruments are not of much value to the maker after they have been repaired, as a satisfactory profit is not made on them. To sell the magneto sets to a dealer in second-hand telephones means a sacrifice, as the market is usually flooded with second-hand equipment, much of it as good as new. Practically the only place where the sets can be utilized is in the country. This shows the wisdom of using only bridging telephone sets throughout a system as they may be used for either city or country service at any time.

Before any change towards a common battery system is made in a magneto plant, it will be necessary to visit each telephone and install in series with the ringer, a condenser. It may be of 1 or 2 mf capacity, the 1 mf condenser being sufficient where a 1,000-ohm ringer or one of higher resistance is used. This is an expense that should not be overlooked. While the condensers can be used in time in the common battery system, there will be an overstock if the instruments are changed in accordance with plan (a), unless the new common battery instruments are purchased without condensers and the condensers changed from the old to the new telephones at the time the sets are installed. When this is done, it is obvious that condensers of the proper type and size as required for the common battery telephones be ordered.

The second plan (b) is usually less expensive than plan (a). The condensers can be changed as just described. The work of changing the parts from one cabinet to another can be done at leisure. There is considerable work necessary to re-adjust the switch hooks, etc., in the new cabinets, and to drill holes for the apparatus and wires. It is seldom that the common battery cabinets can be purchased properly drilled for the parts from the magneto sets. As it is desirable to make the change of instruments universal throughout the city, much of this assembly work must be hastily done.

(To be continued.)

The Telephone Book "Bank."

"Lisle thread" banks, the foe to the holdup man; tin can and feather tick depositories, the favorites of the elderly fortune savers, and other "banks" which baffle estate executors and expectant relatives have a healthy competitor. Its the telephone book "bank," says the Chicago Record-Herald.

A cook employed by George Higginson, Jr., of 713 Rush street, was a liberal patron of the latter institution. Having come into close acquaintanceship with $36 eked from her savings, she tucked her wealth between the leaves of a telephone directory for safekeeping.

Last Saturday R. R. Donnelly & Co., printers of the directory, made the usual bi-yearly change for new books. The old directory in the Higginson home was turned over to the collectors.

It was not until nightfall, when the cook went to the "bank" for a peep at her wealth that she discovered the new one. Mr. Higginson, hearing of her plight, sent word to the printing company, telling of the loss of the "bank."

By that time the book from the Higginson home had been loaded on a car in the Grand Trunk Railroad yards with 40,000 other directories to be shipped to the paper pulp mills. The car was shunted onto a side track and E. J. Dillon, the printing company manager, and Henry Miller, superintendent of the plant, organized a searching party. From the South State street lodging houses they recruited eight men, telling them that a $10,000 bond had been lost in one of the books.

The searching party worked until after dark last night carefully shaking out each book. As the supper whistle was being blown one of the crew shook a book and out fluttered a twenty dollar bill, a ten, a five and a one. It will be returned to the loser today.

Mr. Dillon says that telephone books are fast becoming popular but dangerous savings "institutions."

The Last Word in Exchange Operation.

The Bethel (Ohio) Home Telephone Co. was recently given authority to purchase the Amelia Independent Telephone Co. At the hearing it is reported to have been shown that the latter company employed no switchboard operator.

"How are connections made?" was asked.

"Well," drawled one of the owners, "we have no regular operator, but if anyone goes by the exchange and hears a bell ringing, he steps inside and makes the connections, if he knows how."

Telephone Men, Fellows of the A. I. E. E.

In November issue of the Proceedings of the American Institute of Electrical Engineers the names of following telephone men who were transferred to the grade of fellow of the Institute in accordance with the special section of the constitution are given: Edward H. Everit, chief engineer, Southern New England Telephone Co., New Haven, Conn.; Angus S. Hibbard, efficiency engineer, American Telephone & Telegraph Co., New York; Thomas D. Lockwood, general patent attorney, American Telephone & Telegraph Co., Boston, Mass.; S. G. McMeen, consulting engineer, and president, Columbus Railway & Light Co., Columbus, Ohio.

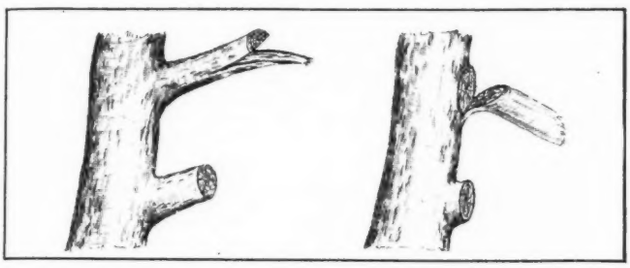
Practical Subjects—Letters and Discussions

Letters From a Retired Lineman to His Nephew.

Podunk Valley Farm.

My Dear Ben:—

With the glorious Fourth only a week ahead, I'll begin by telling you the biggest fool trick I ever did in my life, and all because I was determined to be game. Gameness is all



Wrong and Right Tree Trimming Methods.

right but it should always be tempered with a little judgment; the more judgment, the better.

It was about the first of July that we struck Bonnyberg, and we hardly landed before we were told that the citizens had been waiting for us. A new flag pole had been set up in the public square but when it was raised, they had forgotten to put the rope through the pulley. After it was set up, there was no one who dared to go up farther on it than a cross tree, about 50 feet up. The pole was all of 90 feet, smooth and slick. The butt was only about 22 inches through and the top not over three. There was a splice in the middle but it was a good one, as it happened to have been made by an old ship carpenter who had had experience at splicing masts and spars.

Well, as soon as we arrived in town, we were told that there was a ten-dollar bill waiting for the man who would go up and put the rope through the pulley. We all went out and took a look at the pole, and each one dared the other fellow to tackle the job. The outcome of it was that I bet a new hat with the foreman, I could do the trick. A new hat and ten dollars looked like a fortune to me just at that time. The morning of the third was as still as a mouse; not a breath of air stirring, so I proposed to do the job right then.

I tied one end of the rope around the butt of the pole and fastened the other to my belt, and up I went. Well sir, the top of that pole didn't seem to be any bigger than a whip, but I put the rope through the pulley and tied a pair of connectors to it and let it fall.

Down below every one had been watching me and no one noticed the town fool who came along, unfastened the lower end of the rope and stood with it in his hand. I wasn't looking down, but was hanging on and rotating in a circle about 10 feet in diameter, expecting every minute that the pole would snap. I was waiting until the rope stopped running through the pulley before starting down.

All of a sudden I felt a slap on the side of the head and at the same instant saw the end of the rope go through the pulley and fall to the ground. When I reached the ground, the town fool was sitting on the grass nursing his shoulder where the connectors had struck him. Of course, the blow had caused him to let go of his end of the rope.

I wasn't quite game enough to repeat the climb and so far as I know, the rope has not been put through the pulley yet. No, I didn't get the hat, nor the ten dollars either. Since that day, I've always confined my efforts in climbing to occasions when it was necessary. You will be taking enough risk if you follow that rule.

You say you are having trouble to get the necessary tree trimming done. Almost everyone does. I cannot give you much advice about getting rights, except to talk square and act the same. Don't say you want to cut off just a little and then cut out the whole top of a tree. That is only piling up wrath against the day of wrath.

If I were to do it over again, I would never let a man go into a tree with a pair of spurs on his feet, nor with any other tool except a saw. Of course wherever you can get permission, it is better to start trimming a tree at the ground line or a few feet above. That will insure a clear line for some years to come. If you begin to talk cutting a tree down right from the start, you may be able to get permission to trim as a compromise, which you would not have secured if you had talked trim first off.

The best fellow I ever knew for getting special rights, used to cater to the womenfolks entirely. He had a way of praising their housekeeping, and complimenting the children. He really did think a lot of children and he'd rock a crying baby to sleep in no time, while the mother hustled together a dinner for the gang. Before he got through he could cut the rose bushes in the front yard, if he wanted to. I'm not a natural jollier but I've found out that a compliment to the ordinary housewife goes a long ways.

You fellows seem to be doing an awful amount of work for the size of your gang. Better look at the tying in pretty carefully. You'll find some of it is being done pretty carelessly. A man can do only about so much in a day and do it right. I judge most of your men have been climbing about four months and they are breaking records that we were proud of after we had been in the business two or three years. And there wasn't any cub line gang that could keep within gunshot of us either. As I said before, you are not exactly responsible, but you'll get the blame if six months from now, the wires are down on the cross arms.

I have got a bunch of lambs picked out when you send me that forty. I've made up my mind that to get the whole bunch, I'll go into partnership with you. We wish you were headed this way. Julia is ready to make you an offer for your brindle calf, but I tell her to hold off for a while as maybe you'll want to sell it cheap later on. I've seen the time when I'd have sold a house and lot for a ten spot.

The whistle will blow in the morning before I'm ready so I'll wind up.

Your Uncle Dick.

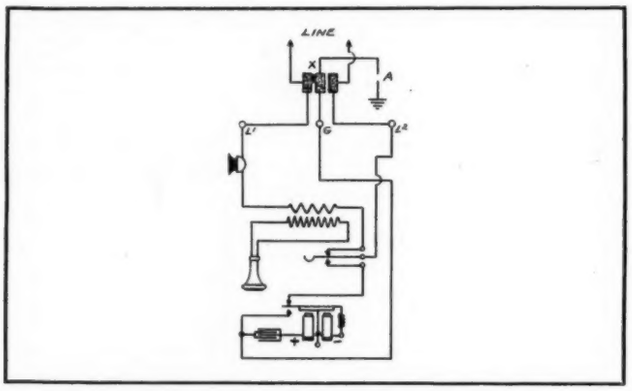
A Case of Cross Ringing Run Down.

After a heavy lightning storm, a telephone of the four-party, direct current, selective type was reported as cross ringing. On testing the line, it was found that the bell rang equally well on either positive tip, or negative sleeve, current but a voltmeter test showed the line to be free from a short circuit or a ground. The troubleman, on going to the instrument, connected his test set across the line side of line and ground binding posts, to test the ground connection. He got plenty of battery and raised the operator, but found the line very quiet. This seemed strange, as the circuit paralleled a 110,000 volt transmission line for about two miles and a ground usually made it extremely noisy. So he called the wire chief, who tested the circuit, while the troubleman still had his test set connected across the sleeve and ground binding posts. Instead of a ground, the voltmeter showed short and, when the troubleman shorted the line at the telephone, it still showed short and no ground, which proved that reversed wiring was not the cause of the trouble.

After a little thought, the wire chief advised the trouble-

man to look at his arrester carbons and go over the ground connections. Inspection showed one pair of carbons to be welded together and the ground wire blown open under the insulation between the arrester and ground rod. After cleaning the carbons and splicing the ground wire, the trouble was found to have been cleared.

The cross ringing and the peculiar results of the tests



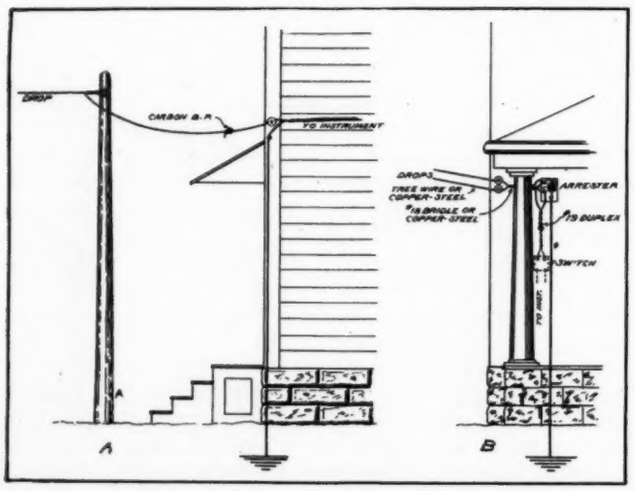
Circuit Showing How Fused Carbons Caused Cross Ringing.

can be accounted for by an examination of the accompanying sketch, where the blistered carbons are indicated at *X* and the open ground wire at *A*. It will be seen that the combination of the two faults bridged the ringer across the line, instead of line and ground. As the ringing keys at the exchange were wired so as to ground one side of the line while applying ringing current to the other, the bell rang when current of the proper polarity was connected to either side of the circuit.

Ingersoll, Ont., Can. Benjamin Olney.

The Proper Protection for Magneto Subscribers' Sets.

The question of proper protection for magneto subs. sets treated under "Practical Subjects" in the November 16 issue, is one in which I am greatly interested. This company operates grounded lines almost entirely. The method of protection I find almost everywhere is to place a short pole within six or ten feet of the house and dead



Protection for Grounded and Metallic Circuits.

end the drop wire on it. The "left-over" end is then connected to the house wire, using the "carbon" binding post of an old battery, as shown in diagram A.

This arrangement certainly prevents damage to the instrument. However, the company now has a number of good cedar pole leads with plenty of room on the arms and there is no reason why we should not get the benefit of them by making a good proportion of our circuits metallic. This will mean a different kind of protection.

The style that looks good to me is that which was used by the Michigan State Telephone Co. up to about a year ago. Carbon blocks were placed outside the building with no fuses and a disconnect switch was located above the telephone as shown in switch *B*. I would use a self-cleaning carbon, place the arrester under a porch or other shelter, or else inside the building at the point where the wires enter and also install a switch for the "nervous."

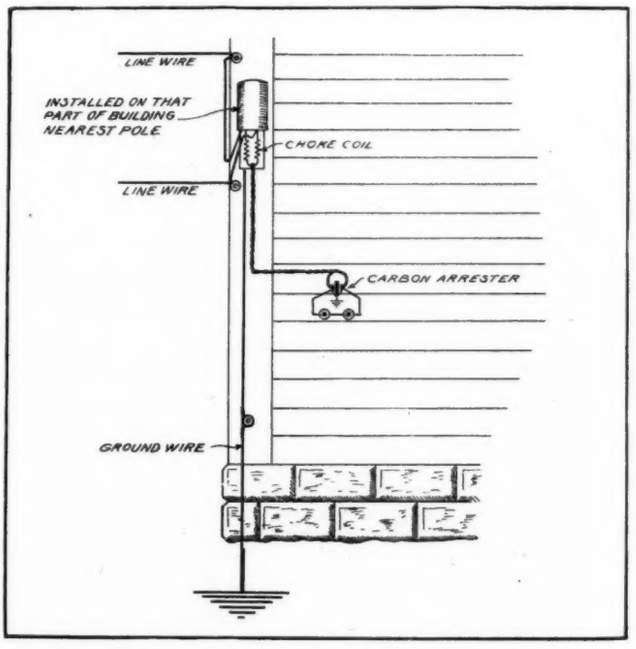
When the instrument is placed near where the drops fasten to the house, I am willing to use only circular arrester on the telephone. I would not care to do this with the older types of sets which do not have this arrester.

It seems to me that this sort of protection is real protection. First cost is not a large item. It is there to stay, and trouble expense is at a minimum.

Asher Hadley.

Pittsford, Mich. Hillsdale County Telephone Co.

The subject of proper protection for magneto subscribers' sets is of interest to me and is one that should be of vital interest to every telephone manager. I have had a very liberal amount of experience with protection for



Metallic Arrester for the Heavy Lightning Discharges.

rural subscribers' sets. I found the ordinary carbon blocks reasonably efficient in protection of the telephone apparatus, but these were a source of trouble in themselves. It was always the same old story of a "grounded carbon." This I think is the experience of a large majority of the operators of rural lines.

I have now a system of protection, which is very simple and inexpensive, that has absolutely put this kind of trouble "at rest."

Referring to item 1, "The value of the protector proposed in safeguarding the subscriber and instrument," in TELEPHONY of November 16, page 771, this protection cannot be obtained by using one piece of apparatus. To properly safeguard the subscriber, the heavy discharges should be grounded on the outside of the building and none but a metallic arrester with ample firing surface should be

installed for outside use. A carbon arrester, and where in proximity to high tension circuits a fuse block, should be installed on the inside of the building.

The outside protector which I use is one made by the Metallic Lightning Arrester Co. and from this arrester I get the most protection. It protects the building and safeguards the subscriber. It also protects the carbon arrester from heavy discharges that would result in grounded carbons. Reference to the drawing, shows the arrangement of apparatus with this plan of protection. The outside arrester is mounted at a convenient height and connected to a good ground directly underneath if possible, by not smaller than No. 12 wire. Number 16 duplex wire is run from the Metallic arrester to the carbon arrester, which is usually on the telephone.

Taking up item 2, "The cost of clearing protector grounds and replacing parts," not much can be said here as grounded carbons are eliminated and no parts are to be replaced. By referring to the drawing, it will be noticed that directly under the outside arrester, choke coils are formed in the duplex wire. These have a choking effect on heavy discharges with a result that a very little lightning gets to the carbon arrester, not enough to cause a ground. The carbon arrester is only installed for the purpose of short-circuiting light discharges which might cut a coil or winding in the telephone.

I have used this plan of protection for some time and find it absolutely practical and dependable. In fact, it has given me perfect satisfaction and meets with the hearty approval of the subscribers.

Considering item 3, "Its first cost and installation expense," the outside protector is usually the only additional equipment needed. Its cost is less than a dollar and it can be installed in a very short time by the average lineman. It would be policy for a company to send out men to install it who would leave a good impression with the subscriber, as work of this kind is particularly sure to attract their attention. A little explanation from an intelligent lineman will do more to win the confidence of the subscriber than all the boasting the officials may do of good service, toll line connection, and expensive central office equipment.

Lewiston, Minn. Henry E. Wirt.

In the November 16 issue of TELEPHONY, I notice the request for an answer to the question, "What is the proper protection for the subscribers' station?" The writer of the question desires to know what method should be used to secure the greatest safety and economy. As an answer to the question, I wish to state that I have had experience in a magneto exchange, and after trying several methods, the No. 400, also called the "toll line" or large "carbon block," arrester has given the best results both as to safety and economy.

The blocks should be placed in a dry place, on the side or ceiling of a dry, protecting porch or inside the building. The center block should be sufficiently grounded through a wire of good size. This wire should run straight to ground and should not make any turns from the instrument which would cause the high frequency lightning discharge to rise higher than the instrument in its path to ground. As a matter of fact, high potential current (if lightning) will hardly ever "bend back," or travel in a crooked, upward path from an instrument to an ultimate ground. It will jump into the air through the instrument rather than follow devious, crooked ground wires.

Among rural exchanges in this section of the United States, this latter fact about grounding arrangements for lightning, is only just being learned by the managers. There are plenty of linemen who think it is very easy to "protect" against lightning by a ground wire which would run upward from telephone through a hole in the side of a house where the conductors enter and then run down the outside wall of the house to a ground rod. The telephones are not all ruined even with such treatment as this, which shows they are well built, to say the least.

New Wilmington, Pa. . R. J. Totten.

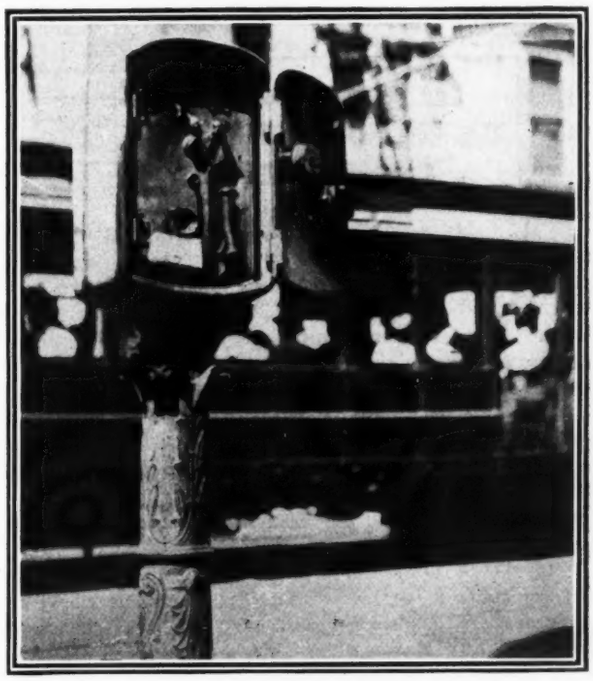
Policeman's Telephone Box Used as a Medicine Chest.

An odd but sensible idea is used in connection with the police telephone boxes in Los Angeles, California. In each box in the downtown district are placed the necessary materials to give aid to the victims of an accident, while waiting for the ambulance to arrive with doctors. A small package contains antiseptic bandages for the wounds, two antiseptic compresses of sublimate gauze in oiled paper, cambric bandages, safety pins, etc.

The police are instructed in the use of these things. It means that the bleeding from an injury is stopped with medicated materials instead of the handkerchief loaned by some passerby and which often is not very clean.

The Los Angeles police surgeon, Dr. Zerfing, claims that the first dressing of any wound is the most important, and if such is not cleanly, slow healing and blood poison is apt to be the result.

He also states that the equipment of these telephone boxes is, in the end, an actual saving to the city instead of an expense, as the public hospitals are often called upon



A Novel Emergency Medicine Chest.

to care for these injured ones who were not properly treated in the first place and therefore contracted disease or long illness.

The photograph shows the small package in the telephone box where it is always ready for use.

Los Angeles, Cal. L. M. Edholm.

Cedarmen to Meet in January.

The annual meeting of the Northwestern Cedarmen's Association will be held at Duluth, Minn., January 7 and 8, 1913. The place of holding the meeting and program will be announced later.

The Telephone Inspector and the Troubleman

The Twelfth Installment of a Series of Articles Which Deals in an Elementary Manner With Many of the Problems Encountered in the Operation of Small Exchanges—Various Kinds of Joints—Methods of Transposing

By A. E. Dobbs

"Now here are a few sketches showing various joints with which you are to a greater or less extent familiar. This (Fig. 23*a*) is a connection we sometimes find in farmers' mutual lines and is a horrible example. But even this joint, if kept under a strain of 50 lbs. or more, will

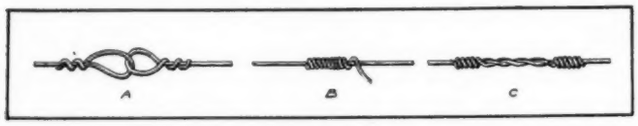


Fig. 23. Iron Wire Splices.

have a much harder contact, than will be found in the ordinary spring contacts of the plug and jack, or, the telephone switch hook. The next joint (Fig. 23*b*) is a half connection which should be made with at least ten turns.

"This one" (Fig. 23*c*), George went on, "is the ordinary iron wire splice. It should have ten turns each side of the neck when made in No. 14 wire and six turns for larger sizes. Here (Fig. 24) is a sleeve connection. It should have

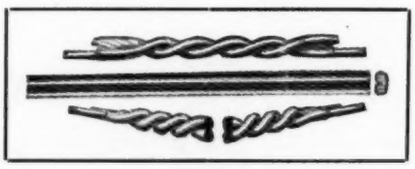


Fig. 24. The Sleeve Splice.

three complete turns and then an extra turn or two of the free end around the line wire as a matter of safety. In making the twist pliers should not be used, as connectors are the only tools which will make a satisfactory twist.

"In this sketch (Fig. 25) is shown the three-wire joint, which is made by wrapping in another piece of wire about a foot long with the two ends of the line wire. The clamp connection made on branch lines where it is desired to make tests at times, is shown on this sheet (Fig. 26). Some companies use these at all branch connections instead of this one (Fig. 23*b*) I just showed you."

"This sketch (Fig. 27) shows how ordinary transpositions are made as well as those at test stations where test connectors are used. We will have one test station between here and Northville. This sketch (Fig. 28) shows the running transposition which is now being used to a large extent on new lines, as it saves cutting the wires at transposition points. Instead of the lower bracket and pin some companies make the transposition on a single insulator but I prefer the two insulator plan."

Farmers' Lines.

The line construction progressed, but long before the men began to string the wires, the manager had gone out and secured the signatures of all the farmers along the route, to subscribers' contracts. Morever, he had also received applications from farmers living two or three miles off the route, especially, those living along the cross-roads. As there were five or six farmers living in each direction who would take the service Mr. Risk concluded to build to them while he had the construction gang together, notwithstanding that December weather had already set in and it was liable to freeze up almost any day.

"We can string wires any time," he said, "but we must set poles while the ground is open."

George called Johnston and Tom together:

"Lay out these spur lines with poles placed 165 feet apart, or 32 to the mile," he directed. "Place a lightning rod of No. 9 iron wire on every sixth pole. If you encounter any obstacles, you may lengthen or shorten this distance somewhat for it is not absolutely essential that the poles be evenly spaced, although it is better.

"As neither of these spur lines is likely to carry more than two wires we will use 20 ft. poles with 5-in. tops and do no work on them with the exception that they will have to be roofed at the top. Brackets will be used instead of cross arms. Guy all curves or corners, with No. 9 wire, for we do not want any slack in the line after we pull up the wires, nor do we want to go out chasing trouble every time the wind blows.

"Set all of your poles four feet deep," he continued. "Set them straight, and tamp the dirt well. Do not slight any part of the work just because it is a farmers' line, for all the profit from this class of work depends upon the low cost of maintenance. Drive a ground rod at every house to take care of the lightning arrester and drive it six feet deep. Keep away from the cellar walls as they are likely to dry out the ground and leave the house with practically no protection.

"Make each drop to the house with one weatherproof insulated wire and one bare wire which will prevent their getting crossed if they should happen to blow together. Do not draw the house lines tight, as we do not wish any complaint from humming lines, neither do we wish to draw the poles out of line with a strong side pull.

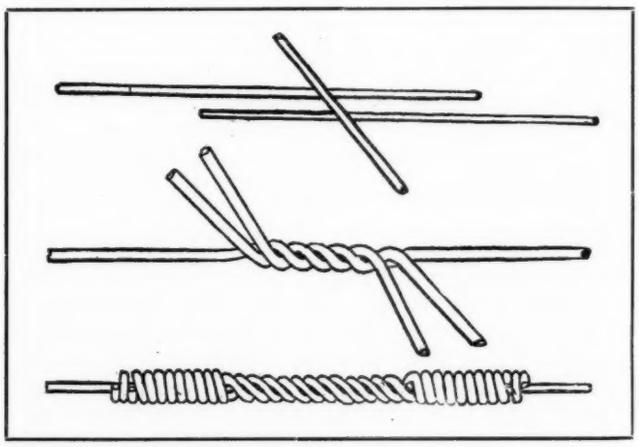


Fig. 25. The Three-Wire Joint.

"Johnston," George went on, "you take one gang of diggers and Tom, you take the other. Now that you all know just what to do, get busy, for we are likely to have a freeze up any day now.

"William," noticing Will standing around listening to

the instructions, "go out to the yard, as there is no trouble in this morning and begin roofing the poles."

"What is roofing?" asked Will.

"Cutting the tops to a point, like the roof of a house."

"Tell me," asked Will of George as soon as the rest had gone, "why you place lightning wires every sixth pole in those long sections, when you put them every fifth pole on the toll line?"

"Because those short spurs are not so much exposed as the longer lines," George replied. "While we cannot afford to take any chances on the long lines, we can, on the shorter ones. An ideal protection for poles would be a lightning conductor on every pole but the expense would be considerable, so we take the chances with fewer conductors. We have also found that a rod every fifth or sixth pole affords practically all the protection that is really necessary."

"By the way, Will, nail on the brackets before you let the poles down off the 'horse.' The gang then will only have to put on the insulators before setting them up. Send a man out with the teamster with instructions to throw the poles in as fast as he finds holes dug for them."

"Will he need the derrick?"

"No. Two men can throw those poles in without even a single pike pole."

William worked diligently and soon had a load for the teamster. As there was no man on hand to send out, he told the teamster to ask Johnston for a man when he reached the place where the men were working. Johnston had two or three men working on his end of the line and only about a dozen holes dug when the teamster ar-

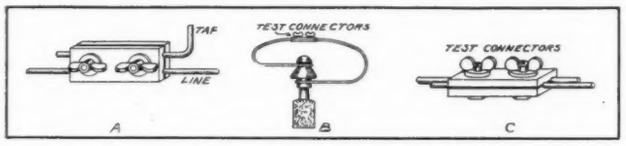


Fig. 26. The Test Connector and Its Use.

rived. He threw the poles in the holes and directed the teamster to distribute the rest of the load along the way. The next load he told him to take to Tom's end of the line. He also sent back word that he would need three 25-ft. poles to level up the line in some low places and that Tom would need two. His progress for the rest of the day would be quite slow as on his end of the line he had encountered hard shale digging.

When Will reported this to George, that individual went out with the next load of poles taking a few sticks of giant powder along with him. He found, as he expected, that Johnston had only five holes dug to show for about four hours' work.

"Good," exclaimed Johnston as soon as he caught sight of the dynamite. "Now we can dig holes."

Going ahead he directed the men to work their digging bars down to a depth of four and a half feet through the shale. Then placing a cartridge of the giant powder in the

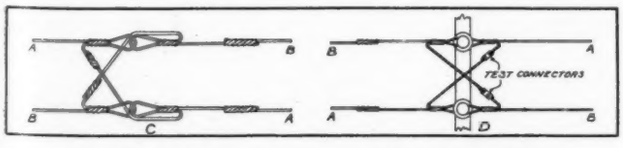


Fig. 27. Pole Transposition and Test Connection.

holes, he soon loosened up dirt enough to make scooping it out an easy matter. In front of a farm house, where the farmer seemed somewhat nervous regarding the use of dynamite, he placed two poles over the hole. This was done more to allay their fears than from any real danger but, as George explained, it would not do to take any chances of even a pebble flying out and hitting someone.

"I see that you understand dynamite," remarked George.

"Sure," responded Johnston. "I certainly have handled enough of it. Why, once in the West, I dug holes with

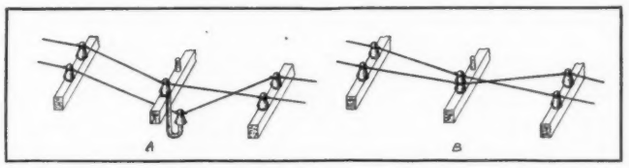


Fig. 28. The Running Transposition.

giant powder right through the business part of the town when the ground was frozen two and a half feet deep. I never even cracked a plate glass window, but I loaded the tops of the holes well with railroad ties and proportioned my charge to the work it had to do. That is the whole secret of handling dynamite with safety."

"That must have been a hurry-up job if they wanted holes as badly as that."

"It was. I saved the owner his franchise by only two days at that."

(To be continued.)

A. I. E. E. Matters.

At the November meeting of the board of directors of the American Institute of Electrical Engineers, authority was given for organizing a branch of the Institute at the Clemson Agricultural College, Clemson College, S. C.

A communication was read from the National Electric Light Association transmitting copies of the booklet and chart containing rules for the resuscitation of persons shocked by electricity which were prepared by the commission organized under the auspices of the N. E. L. A., under the guidance of the American Medical Association, and upon which the American Institute of Electrical Engineers was also represented. The board adopted a resolution directing the secretary to publish the rules and chart in the Institute Proceedings and to promulgate these documents in every way within the scope of the secretary's duties.

The public policy committee reported upon the matters submitted to it at the last meeting of the board in regard to the patent situation. The committee submitted for passage by the board certain resolutions addressed to congress relating to the American patent situation. These resolutions, which were adopted by the board subject to the approval of a majority of both the public policy and the patent committees, urge suspension of action on all patent bills now pending and the appointment of a commission made up of unbiased, independent, non-partisan men of national standing to investigate the American patent situation and to recommend to congress such action as may appear expedient.

Looking to Merger at St. Joseph, Mo.

An ordinance has been introduced in the St. Joseph, Mo., council authorizing the merger of the Home and the Missouri & Kansas telephone plants in that city. The bill further provides for the repeal of the special ordinance granting the franchise to the Home company.

J. W. Gleed, general attorney for the Missouri & Kansas Telephone Co., has advised the members of the city council that the company to be formed by the proposed merger of the Bell and Home telephone companies would consent to a franchise tax of 1½ percent. of its annual gross receipts, in lieu of the occupation tax now exacted from the two companies.

Queries on Theory and Practice

Grounded Lines and Power and Lighting Circuits.

"The 220 volt direct current electric light company will, in a few days, connect to a 16,500 volt, 3-wire, alternating current system. We have seven lines which are from 10 to 15 feet below the transmission line, for the following distances; one line, 4 miles; one line, one mile; five lines, two miles. All the lines are single wire with ground return.

"Do you think the induction will be so bad that we will have to use coils to do away with it?

"There will be a series, 8.6 ampere incandescent street lighting lead parallel to a 50-wire line about one-half mile

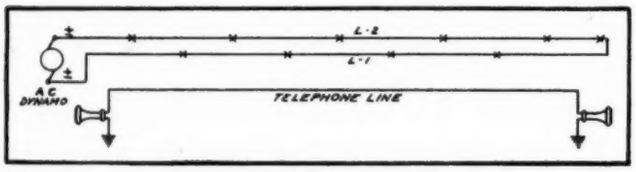


Fig. 1. Series Lighting Lead, Paired.

in town, and a 110 and 220 volt commercial line on the opposite side of the street from a 20-wire line, two blocks long.

"For 900 feet, a 50-pair cable is from one to five feet below a street and commercial lighting circuit. The cable is run grounded, the same as open wire lines. I know this is a very poor way to have a telephone system, but the company can not see its way clear to remodel.

"We use ¼ ampere fuse over a ground strip for cable protection, and a ¼ ampere fuse and carbon block at the switchboard. In your opinion, is this enough to protect board and operator, in case of a cross on either transmission or lighting wires? Any suggestions you think will help, will be appreciated."

We assume, though not directly stated, that the direct current distribution at 220 volts will be changed to alternating at the same voltage. If this is the case, you will have your troubles until you make the system metallic.

Those seven lines which run from one to four miles, under the high tension transmission line, will certainly have to be made metallic. We strongly advise making them metallic their entire length, not merely where they parallel the power line.

That series alternating current street lighting circuit will cause you the most trouble, for the return wire will be too far away to help neutralize the induction. In Fig. 1 are shown the conditions which would obtain if the street lights were on a line, both wires of which followed each other closely all the way. There is a tendency for the line, L_2, to neutralize the induction of line, L_1, for they will be opposite polarity of voltage and current all the time.

In Fig. 2 is shown the conditions which exist in the series street lighting circuit, which runs a single wire up one

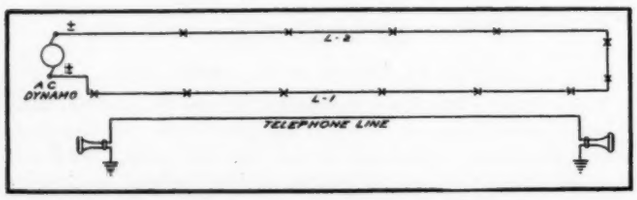


Fig. 2. Series Lighting Lead, Not Paired.

street and down the other. Side, L_1, is close to the telephone line, and has a strong induction. The return line, L_2, is too far away to do any good in reducing the noise. We have known of a metallic circuit cable which had to be moved to a different street to avoid the noise due to a series alternating current arc lighting circuit. So your ground return circuits have no show at all.

It is hard to build up a business and have some one come in and interfere with it, but more than one telephone company has been forced to change all its lines to metallic by the advent of electric power and lighting, so there does not appear to be any way around it. You may obtain some relief in certain cases by moving your leads to other streets, but it will be hard to keep away from the lights, if they cover the town.

If your fuse and carbon blocks at the central office are arranged as in Fig. 3, you will have ample protection against the 220 volt current. The reason for placing the fuse toward the line is that when a cross occurs, the current will arc across the air gap in the arrester to ground, the heavy current following will blow the fuse, and leave the circuit open. Be sure that the fuses are long enough to extinguish the arc.

There is no satisfactory and safe protector against high tension current, such as 16,500 volts or above. It acts too quickly to be stopped by a fuse, and enough may get by the carbon blocks to do damage before the arc occurs. It is certain that you can not depend upon any protective device to save your operators, for it may kill one of them before the protective device acts. The only safe way is to protect the crossing of the high tension wires over your telephone lines by a grounded cradle or its

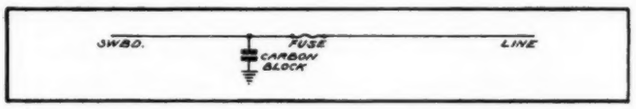


Fig. 3. Proper Arrangement of Fuse and Arrester.

equivalent. This the power company can be forced to do, as the high voltage is a menace to life against which the last comer must protect the public. The cradle must be so constructed that no telephone line can pull up into the power wires, and so that a broken or sagging power wire can not come into contact with any telephone wire. When the power wire touches the cradle it will thereby touch ground and burn off.

Division of Tolls on Interchanged Business.

"There is some discussion among the members of our company regarding the proper basis on which we should settle with the toll company which owns the line between here and an adjacent town. Can you give us any information on the subject?"

The Iowa, Michigan and Indiana clearing houses allow a 25 per cent. originating commission, limited, we believe, to 12½ cents on a message. The Nebraska clearing house did allow a 12½ per cent. originating and 12½ per cent. terminating, but later abandoned this plan, and is using the straight 25 per cent. The Eastern States Traffic Association allows a 30 per cent. originating commission without any limit.

The original idea for limiting the commission was for cases where toll line companies made contracts with exchange companies, owning no toll mileage.

For originating business, a 25 per cent. commission is quite generally agreed upon, while for incoming or terminating business the commission varies from 15 to 25 per cent. Where both companies own toll mileage, the balance of the message fee is divided according to the air line mileage of each company.

COMMISSIONS, COURTS AND COUNCILS.

(*Continued from page* 832.)

Atlantic City, which are listed in the same class with Trenton in the territory served by the Delaware & Atlantic company.

The increase therefore is, on its face, declared to bring about the eliminating of discriminatory and preferential rates in the Trenton area. In denying the motion the commision promised an early hearing to determine the justice and reasonableness of the new schedules.

North Dakota Commission to Hold Conference.

Telephone managers and owners of lines operating in North Dakota will meet with the state Railroad Commission December 1, at Bismarck, when the question of uniform rates, rules and service will be discussed.

The call for the conference, authorized by the commission at its meeting in Grand Forks, marks the formal opening of a movement which will be conducted by the board looking to the readjustment of all telephone rates in the state.

Some time ago the commission directed inquiry into the rates and found that there was a wide difference in charges in various sections of the state. The differences not only affected toll rates, but local service as well, and the commission proposes that these shall be uniform in all towns where conditions are identical.

Ohio Commission to Go to Dayton.

Announcement has been made to the effect that the members of the Ohio Public Service Commission will go to Dayton on December 11 to hear the complaints of the local physicians regarding the alleged excessive charges of the Central Union Telephone Co. on party lines.

The rates on both lines are now fixed at $8 per month, $5 for the office and $3 for the residence service.

Grants Rate Raise and Orders Improvements.

Following several hearings the South Carolina Railroad Commission has issued an order allowing the Southern Bell Telephone Co. to increase its rates in Spartanburg 50 cents per month for each telephone. The order was granted on the condition that the company make certain improvements at a cost of $150,000 and that reasonable service is furnished. The new rate will go into effect within 60 days after the improvements have been made, which includes the installation of a common battery system.

The majority opinion of the commission was signed by B. L. Caughman and G. McDuffie Hampton. John G. Richards wrote a dissenting opinion.

Columbus, Ga., Carries Rate Case to Commission.

A formal protest from the mayor and city council against a schedule of rates which the Southern Bell Telephone & Telegraph Co. proposes to inaugurate in Columbia, Ga., has been received by the state Railroad Commission. The commission is petitioned to delay the inauguration of the new rates until the city council can employ an appraisal expert to determine the value of the property of the telephone company in Columbus.

It is contended by the Columbus council that the rates should not exceed an amount sufficient to produce a reasonable return on the investment in that city.

In 1909 the Southern Bell company purchased the Columbus Automatic Telephone Co. for $50,000. The transaction was approved by the Railroad Commission. At that time the company agreed that there would be no increase in existing rates until the company's subscribers in Columbus numbered 2,500, and that in no event should increased rates become effective until January 1, 1911.

In this agrement, which, it is said, was ratified by the Columbus city council and approved by the commission, the company was to be permitted to increase its rates on January 1, 1911, if it had the required 2,500 subscribers, from $4 for business telephones to $4.50, and from $3 for residence telephones to $3.25.

On August 1, 1912, the company announced that it had 2,802 subscribers, 302 in excess of the number upon which an increase of rates was to be permitted, and on September 1 notice was given to the city council and the public of Columbus that on November 1 the increased rates would become effective.

The city council of Columbus now declares that it had no legal right to make the rate agreement, and it urges the commission to hold up the new rates until it can determine what will be reasonable and just rates for that city.

Rulings of South Dakota Commission.

The following matters were handled by the South Dakota Railroad Commission at its recent sitting in Pierre:

An application was received from the Wessington Springs Telephone Co. for permission to increase its rates and to charge certain toll rates. It was decided to hold a hearing at Wessington Springs later.

The Franklin Telephone Co., of Madison, filed a petition for connections with the exchange owned by the Dakota Central Telephone Co., at Madison.

The Central Telephone Co., of Lesterville, filed a petition for permission to alter certain rentals. The matter was referred to Mr. Dougherty, counsel for the board, for his opinion.

The Gas Belt Telephone Co., of Okobojo, filed a petition for permission to charge certain toll rates. This was referred to Mr. Robinson, commissioner, for opinion.

The Dakota Central Telephone Co., having filed an application for permission to add to its toll schedules certain special rates for the use of commercial telegraph companies, was granted permission to do so.

The Hermosa Telephone Co. filed a petition for permission to charge certain telephone toll rates, which was referred to Commissioner Smith.

Commissioner Rice filed his report with reference to the complaint of the citizens of Milbank concerning rates. In view of the fact that the 25 cents was in the nature of a discount if the bill were paid by a certain time each month, rather than a penalty if not paid, the telephone company was granted the privilege of giving the discount of 25 cents a month for telephone rentals paid in advance on or before the tenth of each month.

The Armour Telephone Co. was granted permission to allow a discount of $1 per year from the yearly rental of rural telephones if paid for the year in advance within thirty days of the time it becomes due.

The Dakota Central Telephone Co. was granted permission to charge $1.50 per month for main line residence service at Mobridge.

The Nebraska Telephone Co. was granted permission to establish new rates from stations on its line at Burkley, Dark Canyon, Elmore, Savoy, Terry and Trojan, to all other points on the line within the state.

To Dismiss Bills Against Bell Officials.

The indictments returned in Denver, Colo., last August by the grand jury against the Mountain States Telephone & Telegraph Co., President E. B. Field, Sr., and E. B. Field, Jr., vice-president and general manager, will be nolled. John Horne Chils, special prosecutor, who had charge of the grand jury when the indictments were returned, has admited that they were faulty as against the telephone company and its officers and would have to be dismissed.

REPORT ON CHICAGO BELL COMPANY.

(*Continued from page 838.*)

their 4,474,171 stations in use at the close of 1911, should be observed. The percentage of station removals, maintenance and depreciation to the entire investment in telephone property was given in the last report of the A. T. & T. Co.:

1895 .....9.1 per cent.
1900 .....8.4 per cent.
1905 .....8.9 per cent.
1910 .....9.5 per cent.
1911 .....9.2 per cent.

In Chicago and suburbs in 1911, when the average depreciable property of $33,277,902 was 89.47 per cent. of the total property of $37,194,588, 9.2 per cent. of the entire property would be 10.28 per cent. of the depreciable property. But this included station removals. This item in Chicago in 1911 was $730,107.20, or 2.194 per cent. of the average depreciable property, but was only 1.85 per cent. in 1910, and apparently will be about that figure in 1912. A reduction of 1.85 per cent. from 10.28 per cent. would leave 8.43 per cent. of the depreciable investment as applicable to maintenance and a depreciation reserve in Chicago, outside of station removals, if the average of all the Bell companies, save the long distance lines, were to prevail here. If the long distance lines be included, there is data from the last three reports of the A. T. & T. for a more detailed comparison, as follows:

The last report of the American Telephone & Telegraph Co. gives not only the telephone plant in use on December 31, 1911, of $666,660,702 (p. 13) for the entire Bell system in the United States, but it gives the plant additions for each of the previous 12 years. (Report, p. 5.) The working capital is omitted, but land is included in addition to the depreciable property. The report also states (p. 6):

"During the year $58,840,000 was applied out of revenue to maintenance and reconstruction purposes; of this, over $12,000,000 was unexpended for those purposes.

The total provisions for maintenance and reconstruction charged against revenue for the last nine years was over $342,300,000."

From this data the following computation is easily made (Table No. 17):

In this computation, the investment of the Chicago company, as it appears on the books of the company, is used. If the property ($417,871.38, Hall, page 14) that was scraped

Description.	1910.	1911.
Average plant investment, including land, but not working capital, of all Bell companies	$584,208,500.00	$638,830,314.00
Ditto for Chicago Telephone Company	30,451,278.00	33,883,648.00
Other Bell companies	553,757,222.00	604,946,666.00
Total maintenance, station removals and depreciation reserve	52,028,009.00	58,850,350.00
Percentage of maintenance, station removals, and depreciation reserve to average plant investment, including land but not working capital in all Bell companies	8.91%	9.21%
Maintenance, station removals and depreciation of Chicago Telephone Company	3,888,533.00	4,228,221.00
Percentage of maintenance, station removals and depreciation reserve in the Chicago Company to its average plant investment, including land	12.76%	12.48%
Maintenance, station removals and depreciation in other Bell companies after deducting Chicago	48,139,476.00	54,622,129.00
Percentage to plant investment and land to these other companies	8.69%	9.03%

Table No. 17. Maintenance and Depreciation Expenses and Reserves of All Bell Companies, Including Long Distance Lines.

before the close of 1911, had been deducted from the Chicago investment, the contrast would have been slightly increased. As it is, however, the other Bell companies are spending only about 9 per cent. of their entire investment outside of their working capital for both maintenance, station removals and yearly additions to their depreciation reserves. The Chicago company, on the other hand, is spending or setting aside about 12½ per cent. for the same purpose. Some allowance may be made for the increased cost of station removals here, but a difference of even 3 per cent. when applied to the investment of the Chicago company for both city and suburbs in 1911, would amount to about $1,000,000 and to the city alone to about $750,000.

The report for 1911 gives the provision for maintenance

Year.	Plant Dec. 31.	Average Plant for Year.	Provisions for Maintenance and Reconstruction.
1902	$250,205,302		
1903	285,574,002	$267,889,652	*
1904	319,010,702	302,342,352	*
1905	369,791,602	344,401,152	*
1906	449,158,502	409,475,052	$ 30,639,200
1907	502,079,902	475,619,202	34,665,700
1908	528,717,102	515,398,502	37,204,200
1909	557,417,202	543,067,152	44,838,953
1910	611,000,002	584,208,600	52,028,009
1911	$666,660,702	$638,830,352	$ 58,840,354
Total		$4,081,232,016	*$342,300,000

*The total for the nine years is given in the recent reports of the A. T. & T., but the separation between the first three of the years is not shown.

Table No. 18. Maintenance, Reconstruction and Plant Investment of All Bell Companies, 1903-1911 Inclusive.

and reconstruction, and the total for the nine years, 1903-11, but reliance is had upon the previous reports for the amount for some of the years covered by the total. The entire provision for maintenance and station removals and to meet depreciation during the last nine years for all the associated Bell companies of the United States, has been only $342,300,000 or 8.387 per cent. of the aggregate of the average investments during those nine years of $4,081,232,600.

An appraisal of all these Bell plants in 1907 gave a value to these properties of $35,000,000 in excess of the obligations outstanding against them. If a maintenance, station removal and depreciation reserve expense of 8.39 per cent. can do this elsewhere, it might seem sufficient in Chicago with its large proportion of long lived investment. At least 8.5 per cent. would appear sufficient for maintenance and depreciation reserve, if station removals be separately allowed in Chicago.

Commenting on this situation, President Vail, in his report for 1908, wrote:

"The result of the appraisement and studies on depreciation, given below, establishes the fact that our charges against revenue for maintenance and reconstruction are conservative and on the right side. . . .

There exists much misunderstanding as to the permanent value of a modern telephone plant. Originally, exchange plants were open wire construction, largely on house-top fixtures and to a certain extent, on poles. The central offices were in leased buildings, seldom fireproof, the equipment was of various types and standards, due to the rapid improvement or development then taking place.

Now the central offices in all the principal centers and in many of the less important are in fireproof buildings built for the purpose and owned by the companies.

From these offices radiate the underground conduits connecting the central offices with each other and the various districts of the exchange territory. Through the subways the wires are run in cables of copper wire, sheathed with lead covering. The extensions of these lines are open wire, generally copper, or aerial cables strung on pole lines of substantial construction."

Commenting upon this matter again in his report for 1910, President Vail made the following significant statement:

"The present policy of the Bell system is to provide against every probable contingency and to base the amount and extent of such provision on past experience—not on future expectations. It is conjectured that the future will show a decrease in the depreciation or reconstruction due to decay, wear and tear, and obsolescence. Changes, improvements, are going on as rapidly as in the past, but the general character of plant and methods is assuming more permanency. The improvements are being evolved from, and are being grafted on to, the old system and methods. The disturbing and sometimes

seemingly destructive conditions following the rapid development of high pressure power and transmission have been to a great measure overcome.

All this has been made possible through the unremitting study and research of the staff of the engineering and experimental departments of the company, who by close attention, observation and study, anticipate and provide for all such contingencies and conditions as can possibly be anticipated or provided for in advance.

Under these conditions there is a small probability that any such causes as those which forced the wholesale reconstruction or rearrangement of plant in the past will again occur; it is, however, for the benefit of the public and of the corporation to have an ample reserve for any contingency which may happen."

That the Chicago Telephone Co. has pursued the same conservative policy as the other Bell companies is indicated in the report of the then president of the company, John M. Clark, in his annual report for 1900. He then said:

"This company has aimed to keep fully up with the improvements that are continually being made in apparatus and in methods of handling the business. In fact, some of the most important of these have been made by electricians and experts in the employ of this company.

The expenditures have been largely increased not only by the growing cost of operation, but also through the necessity of replacing old switchboards and apparatus with new and improved equipment, in order to maintain the quality of the service at the highest modern standard. New switchboards and apparatus were installed during the year, costing $282,-160.38."

It is, moreover, interesting to note that such well established Independent telephone companies as the Tri-State of Minneapolis, Keystone of Philadelphia, Kinloch of St. Louis, Federal of Buffalo, and the Kansas City Home Telephone Co., are devoting less than 8.5 per cent. yearly of their plant investment to maintenance and depreciation.

That the entire Bell system has so completely taken care of depreciation with a total expenditure of 9 per cent. of the plant investment for maintenance, including renewals, and for station removals and for additions to the depreciation reserve investment as compared with over 12 per cent. here during the last two years, is significant.

The fairness of the above comparison is strengthened by the fact that all the Bell companies, including the long distance lines had in permanent underground conduit only 53 per cent. of their entire mileage of wire in December, 1911, and outside of Chicago only 51 per cent., while the Chicago Telephone Co. had 81 per cent. in underground conduits. This would naturally mean that the maintenance expenses would be somewhat larger in the average Bell telephone company than in Chicago.

Real estate and underground conduits and cables, which constitute the most permanent portion of the telephone plant, were given in the 1908 annual report of the A. T. & T. Co., as amounting to only 29 per cent. of the total value of the telephone plants owned by that company; that is, the entire Bell system.

According to the appraisal of Byllesby and Arnold, this portion of the plant of the Chicago company constitutes 39.5 per cent. of its entire investment.

Rate of Return.

Any one familiar with the numerous decisions of rate commissions is aware of how uncertain and vague are most of their expressions upon the proper rate of return. The courts have been inclined to uphold any rate which yielded from 4 per cent. to 6 per cent. return. Their theory has appeared to be that if the rate was as high as bonds were netting the investor in the locality, which was usually from 4 per cent. to 5½ per cent., the rate was not confiscatory. State commissions have held to a higher rate.

New securities in the lighting business in Massachusetts, however, have been ordered by the State Gas and Electric Light Commission to be sold at such premiums as to net the investor only 5 per cent. to 6 per cent.

In the case of a large, old and well established enterprise, like the Chicago Telephone Co., the proper test would appear to be such rate of return as would render possible the sale of additional stock and bonds when needed from time to time for extensions. In other words, the rate should be such as to keep the securities at par, or slightly above. The market for the securities of a well known company is highly competitive. If investors are willing to buy stock on a 6 per cent. basis, and the company insists upon paying 8 per cent. dividends, the investors will quickly run up the price to such an amount, say 133⅓, as will net the investor only 5 per cent. on what he pays for the stock. We may argue that the business is such that the investor ought to have 8 per cent.; but the investor, having his own opinion on the subject, insists upon buying on a 6 per cent. basis, or whatever may be the actual market quotation.

Applying these observations to the local telephone situation, we find that during 1911 the company had outstanding $5,000,-000 of 5 per cent. bonds, which have been constantly sold above par since their issue in 1908. Furthermore, the company during the present year has made another issue of $14,-000,000 of such bonds, which are also selling above par. Its $1,000,000 of loans from the banks were obtained at 4 per cent. to 4½ per cent. interest. The $27,000,000 of 8 per cent. stock sold at 120 to 130 during most of the three years prior to the exchange of nearly all of that which was owned by the minority stockholders in 1911, for the 8 per cent. stock of the A. T. & T. The 8 per cent. stock of the latter company has been selling for some time at 140 to 144; yet this is in the face of the announcement in the last report of the A. T. & T. that on its capital and that of the associated Bell companies it will not hereafter expect or encourage more than 8 per cent.

Now an investor in an 8 per cent. stock at 140 nets on the investment only 5.71 per cent. Even at 130 he only nets 6.15 per cent., and at 125 he nets 6.4 per cent. An investor content with 6.5 per cent. return would only pay 123 for the stock. Since the stock has been above that price most of the time during the last three years, it may be inferred that the investor in Chicago Telephone Co. stock not only does not ask a return of 6.5 per cent. on his actual investment in order to buy it, but that in the bidding of the competitive market he forces up the price so that he cannot make 6.5 per cent.; in fact, by forcing the price above 133, as has been the case recently, the investing market makes it impossible to realize even 6 per cent.

To all this it is urged that the stock, at least of the local company, is more precarious than the stocks of the local gas or electric light companies, because of the existence of competition from the Illinois Telephone & Telegraph Co. That competition has not been serious thus far, and the investor, judging from the above-named market quotations, evidently does not expect it to be; neither do the officers of the Chicago Telephone Co. express any fear from that source.

Of more force is the claim that stockholders may pay more for stock in expectation of occasionally having a chance to buy new stock issues at par.

In view of all these facts, it would seem as if 6½ per cent. to 7 per cent. were as reasonable a rate of return for Chicago Telephone stock as for the Consolidated Gas Co. stock of New York, with reference to which a 6 per cent. return was considered reasonable by the United States Supreme Court in January, 1909.

Again it is urged that the city has the right of purchase at the appraised value at the end of the grant, or at 5 per cent. in excess of the appraised value on January 1, 1919 and 1924, and the city may transfer its right on the latter date. As long,

however, as the company gives good service and is not overcapitalized, it seems to have little to fear in this direction. Certainly an appraisal on the basis of that of Byllesby and Arnold would involve a payment to the stockholders of a large premium in case of city purchase.

The stock outstanding was increased in 1908 from $22,500,000 to $27,000,000, without any contribution from the stockholders. To be sure, the dividends were reduced at the same time from 10 per cent. to 8 per cent., the total annual dividends remaining about the same. The increase of stock has been defended by the company on the ground that the accumulations from the subscribers to meet depreciation were not found to be needed for that purpose, but represent surplus earnings, which could be capitalized. Whatever be said of that procedure, the fact stands out that a stockholder possessed of 22½ shares early in 1908, became a possessor a little later of 27 shares.

Now a dividend of 6 per cent. on 27 shares is equivalent to 7.2 per cent. on 22½ shares. Similarly, a dividend of 6.5 per cent. on 27 shares is equal to 7.8 per cent on 22½ shares, and 7 per cent. on 27 shares is equal to 8.4 per cent. on 22½ shares. Since, however, with the addition of the $4,500,000 the outstanding securities of the company appear to be no greater than the value of the physical property, a return on the stock of 6.5 per cent. to 7 per cent. may be reasonable.

In all this it must be emphatically asserted that a return of 6.5 per cent. to 7 per cent. is not here considered as a fair return in the early days of the telephone company, when the risks of developing a new art were great.

The problem before us now is not so much an ethical problem of what a company ought to receive as it is what return, as a matter of fact, will tempt the investor to furnish the money needed for the growth of the business. If the lessons of the stock market point to 5 per cent. on bonds, and to 6.5 per cent. to 7 per cent. on stock, as sufficient for this purpose, in the case of the Chicago Telephone Co., then such a rate of return is reasonable.

On December 31, 1911, there were 4,474,171 telephones in use among the Bell companies in the United States. Of this number, only 38 per cent. were managed by companies paying 8 per cent. dividends. Outside of the New York and Chicago companies only 11 per cent. of all the telephones were in the hands of the companies paying 8 per cent. No companies paid over 8 per cent., or, so far as can be learned, any amount between 7 per cent. and 8 per cent. Three companies in New England and the Rockies paid 7 per cent. About half of all the telephones in the country were owned by companies paying over 6 per cent., but only 23 per cent. were owned outside of the New York and Chicago companies.

The companies controlling the other half of the Bell system and located largely, like the Central Union, in districts especially subject to competition from the Independent companies, have paid no dividends, or not to exceed 6 per cent.

These and the other facts at hand lead to the conclusion that the 8 per cent. dividends from a few of the Bell companies, notably New York and Chicago, together with the 4½ per cent. payment on gross receipts from all the companies, and the profits of the long distance business, help the A. T. & T. to carry some of the companies that are competing with the Independent companies, or are having other difficulties. Whether the Chicago company should thus collect from the subscribers here to support the parent company, which has always owned over half of its stock and which receives all of the 4½ per cent. payment on gross receipts for the benefit of the stockholders of the national company, or for the benefit of the telephone system elsewhere, need not here be argued.

(To be continued.)

Good Operators' School at Muskegon.

An operators' school was conducted last Friday, by W. S. Vivian, at Muskegon, Mich., which was a splendid success. There were about 50 operators from 15 cities and towns in western Michigan gathered from points as far north as Ludington and Scottville, east to Grand Rapids and intermediate territory, belonging to the United Home Telephone, with several offices represented from the Citizens Telephone of Grand Rapids.

The work gone over was similar to that formerly handled by Mr. Vivian in other schools. Great emphasis was placed on the necessity for co-operating and team-work, also on the use of the voice, in that the quality of tone might be such as would make friends of the telephone using public, and which would convey the idea that the operator at the board was glad to perform the service. This in distinction to what often actually occurs—a voice not necessarily intended to be cross, irritable, or impatient, but which nevertheless carries that idea to the person calling, with the result that he acquires rather a poor opinion of the company.

The work of the operating rules was gone over in detail, so that the girls thoroughly understood the necessity for having implicit confidence in each other. One of the things emphasized was that in signalling on circuits, too often an office does not wait a reasonable length of time for the other office to answer until signalling again, with the result that the operator signalled comes on to the circuit just in time to get the additional ring in the ear, a prolific cause of trouble. Therefore, the operators were urged to wait at least 15 seconds before signaling again.

In passing a ticket through a switching office, where that office reports that the circuits desired are busy, then it is required that the switching operator shall become responsible for that ticket and that the calling office must not call or bother that switching operator again until she calls back. In order that they may know whether or not she does, it is also requested that the originating offices send in the detailed report of all tickets on which the switching office holds it up for a period of fifteen minutes or more, so in this way quite an accurate check may be had on the work.

Two visitors at this meeting from outside the territory directly involved were Miss Lowry, toll accountant of the South Bend Home Telephone Co., and A. D. Hawthorne, toll accountant of the Tri-State Telephone & Telegraph Co., of St. Paul and Minneapolis.

Thomas Bromley, Jr., general manager of the United Home Telephone Co., acted as host and treated his visitors splendidly. The meeting was held in the Knights of Columbus Hall, where the quarters were comfortable and pleasant. Mr. Bromley also entertained the party at lunch at the Occidental Hotel and also with a seven course dinner in the evening. After dinner everybody was brought to the Temple Theatre for the evening performance. At the conclusion it was declared that the meeting had been an unqualified success and that every participant had had a most enjoyable time.

Kentucky Company Prospers.

The Auburn Home Telephone Co., Auburn, Ky., has paid a 10 per cent. dividend on its stock. At the same time it increased its maintenance and surplus accounts by 18¼ per cent. of the earnings of the fiscal year.

During the year the company built 14 miles of standard rural lines, carrying six circuits, and installed its second switchboard. The company began operations three years ago with 60 subscribers. It now has 320.

At the annual meeting the following officers and directors were elected for the ensuing year: President, B. D. Williams; vice-president, A. McCarley; secretary and treasurer, W. H. McKenzie.

From Factory and Salesroom

Conventions: Kansas Independent Telephone Association, Hutchinson, December 17, 18, 19: Northwestern Cedarmen's Association, Duluth, Minn., January 7, 8

An Ericsson Matrimonial Prospect.

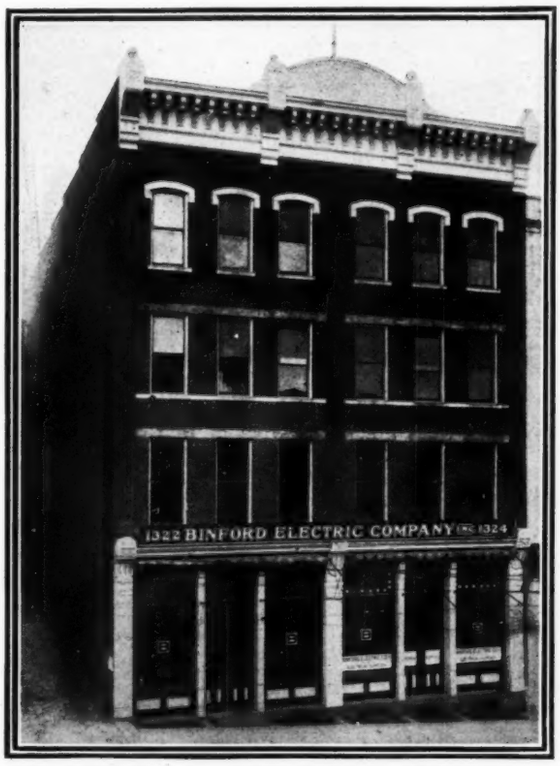
Speaking of marriage reminds us of Lou Korsmeyer. Of course no one did speak of marriage just now and if anyone had there doesn't seem to be any reason for having it remind us of Lou, for, as you all know, he isn't married. We can't believe those Nebraska "sunflowers" know it, however, for if they did they'd quit playing "wall flowers" and snuggle up to Lou.

For one thing he's real easy to look at and for another he's chief of the firm which bears his name. Pity some nice girl doesn't bear it too. But to go on—for the third thing in his favor, he handles Ericsson telephones, breast plate transmitters, etc., in all that big and bountiful state of Nebraska. Aren't those reasons enough for any girl to love him even if his warlock is hard to keep brushed down?

Probably Lou loves Hand Mike's Pretty Sister so well that he can't see any others. That must be it. But anyway here's the tip, girls. Good luck.

Binford Electric's New Building.

The Binford Electric Co., Richmond, Va., is now occupying its new building, shown in the accompanying illustration. The structure is modern in every detail and is especially adapted to the company's business, the jobbing of



New Home of the Binford Electric Co.

electrical apparatus and supplies. The large expansion of the Binford company's trade made the new home an imperative necessity, an evidence of prosperity very gratifying to the organization.

Electrical Credit Association Banquet.

The Electrical Credit Association, of Chicago, held its seventeenth annual banquet in Chicago last Thursday, following its regular business meeting. Over 140 men were present to discuss an excellent menu and to listen to good speaking.

Among those who addressed the banqueters were the following: Harold Almert, of H. M. Byllesby & Co., on "Public Relations and Public Utilities;" William C. Sprague, of Detroit, on "The Law and the Profits;" Dr. Emil G. Hirsch, on "Capital, Capacity and Character;" and Col. William Lightfoot Visscher, poet, humorist and actor.

Frederick P. Vose, secretary and treasurer of the association, presided as toastmaster. A good orchestra lent life and color to the occasion, as did also the Oxford Quartette and Warren Ripple.

February Motor Truck Show in Chicago.

The annual national exhibition of commercial motor vehicles will be held in Chicago, from February 10 to 15, 1913, occupying the second week of the thirteenth annual national automobile show. It is officially announced that the display will be larger and more diversified than ever, filling all of the floor space in the Coliseum Building, Coliseum Annex, and First Regiment Armory.

Sixty-five motor truck and delivery wagon companies have contracted for space, and there is a waiting list of belated applicants. If there should be as many of these as there were last winter between the first allotment in October and the opening of the show in February, the total number of complete vehicle exhibitors will be about 90. Manufacturers have reserved larger spaces this year than last winter and will display more models. Most of them have extended their lines by adding new models of different load capacity, while some companies that heretofore have confined their attention exclusively to gasoline vehicles will exhibit new electric models and others that have produced only electric vehicles will show them side by side with gasoline trucks that they have brought out.

In all there will be on exhibition about two hundred and fifty different models of motor vehicles suited to every kind of industrial, commercial, municipal and federal purpose. So many of these are entirely new designs that they will embody the latest improvements in every detail whereby the efficiency, reliability, durability, accessibility and general ability of the power vehicle is increased.

A tabulation of the various trades and industries represented at last year's New York and Chicago shows, shows the telephone business to be forging rapidly ahead among the patrons of the automobile, the motor truck and the motorcycle.

Johns-Manville Opens Branch in Atlanta.

The H. W. Johns-Manville Co. has recently opened a new southern warehouse at No. 31½ South Broad street, Atlanta, Ga.

The entire building, embracing three floors and a basement, with a total floor area of about 10,000 square feet, will be utilized exclusively as a warehouse.

A New Advertising Idea.

The Monarch Telephone Mfg. Co., of Fort Dodge, Iowa, will start a new plan of telephone advertising with the December 7 issue of TELEPHONY. The page usually devoted to Monarch equipment will, on December 7, be given up to one of the Monarch salesmen. The salesman will

write the copy for the advertisement and suggest whatever cuts are used. He will write about the feature which most strongly appeals to him as being particularly favorable to Monarch equipment.

This new plan will be followed for some little time, giving each salesman an opportunity to publish what he considers the greatest advantage of Monarch equipment. These salesmen's advertisements will start next week and will appear once every two weeks from that time on.

Surely there is no class of men better able to tell the advantages of Monarch apparatus. The salesmen see the equipment in service and they also come into contact with exchanges operating other apparatus, so they have the only real means of making comparisons. These salesmen's advertisements, it is believed, should prove of interest to all readers of TELEPHONY, as every Monarch man on the road is a practical man who has had experience in all branches of the telephone business.

The Factory and Efficiency.

Manufacturers realize the great advantage good factory conditions give to efficient output. Somehow or other, the product reflects the conditions of the factory. This may seem far-fetched, but is not when one takes into consideration the seemingly trivial details, such as neatness of design, nice finish to each separate part, care shown in packing, and other details of like nature, which, although they add no more to the bulk, strength or durability of the product, indicate that pains and care have been taken in every step of manufacture.

The right factory conditions make this possible, as the Oshkosh Mfg. Co., of Oshkosh, Wis., has found, by providing the stimulus and the spirit to better work. Orderly, bright, cheerful working quarters instill into the workman a desire to make his individual work perfect. Naturally, modern equipment, latest methods and improvements up to the minute in machinery are employed in this excellent modern factory. The Oshkosh people assert that they have found fertile soil for the seed of efficiency to take root.

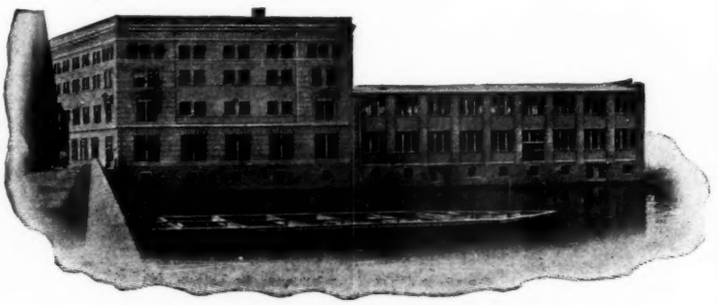
A Valuable and Practical Poster.

The M. W. Dunton Co., Providence, R. I., manufacturers of Nokorode soldering paste, has issued "Soldering Kinks," No. 2. This is a folder which, when opened fully, resolves itself into a wall poster 1½ by 2 ft. in size, on heavy manilla paper, filled from margin to margin with practical "kinks" in the use of solder. These are contributed from all parts of the wide field covered by the Dunton products and are of interest and value to every telephone man in the business.

The M. W. Dunton Co. will be glad to mail a copy of this folder to anyone asking for it. Incidentally it will elaborate on the merits of Nokorode, which, it believes, is the best soldering paste made.

Error Regarding Rushville, Ill.

In the November 16 issue of TELEPHONY, a report was printed to the effect that the Schuyler Telephone Co., newly organized, at Rushville, Ill., had entered into an agreement with the Rushville Telephone Co. to take over all its local property. We are in receipt of advice this week from L. A. Jarman, president of the latter organization, that this is entirely untrue. The original item was sent us by one of our correspondents and was inserted by this paper in confidence of its accuracy. We are glad to be able to authoritatively give the facts in the matter.



Where the Oshkosh Mfg. Co.'s Products Are Made.

A Strong Modern Business, Law and Financial Course

A large number of managers and department heads with the Bell and Independent companies throughout the country have recently become interested, through the Alexander Hamilton Institute, in the work that university schools of commerce are doing in the fields of accounting, finance and management.

The Alexander Hamilton Institute is an educational institution, which was organized a few years ago in New York City, to make available through a reading course for business men a training of university grade.

Its course closely parallels the regular course of the New York University School of Commerce, which is the largest and most successful school of commerce in the United States. Like the university course, it has been planned as a broad executive training along business lines. In view of the statement recently made by Theodore N. Vail that there are thirty $10,000 a year jobs in the American Telephone & Telegraph Co. for men who have a broad and thorough training, this course has special significance at this time for men in the telephone business. The course includes a study of economics, organization and management, accounting and cost systems, corporation finance and financial practice, real estate and insurance, advertising, selling, credits and commercial law.

The course was made possible by the co-operation of a number of eminent business men with members of the faculty of the New York University School of Commerce. Dean Joseph French Johnson, the head of that school, is chairman of the advisory council of the institute. Associated with him on the council are Jeremiah W. Jenks, of New York University; Frank A. Vanderlip, president of the National City Bank of New York; Elijah W. Sells, of Haskins & Sells, one of the best-known firms of accountants in the country; and Charles V. Carpenter, formerly president of the Herring-Hall-Marvin Safe Co.

The course is conducted by a staff of men, most of whom are members of the New York University School of Commerce faculty. They are practical specialists in various fields of business activity, who combine with their practical experience, the educational experience necessary to make the course interesting and instructive.

The basis of the course is a series of twelve text-books, which constitute a comprehensive and readable digest of present-day principles and practices of business. The editor-in-chief of the series is Joseph French Johnson, dean of the New York University School of Commerce. The authors he has chosen are specialists, each of whom ranks as an author-

ity in his own field. Although these books have been issued only a short time, they have already been recognized as the most important single contribution yet made to business literature and have been adopted as text-books in the courses in business subjects at about forty leading universities, including Yale, Cornell, Dartmouth, Brown, New York, Syracuse, Pittsburg, Northwestern, Illinois, Michigan, Minnesota, Wisconsin, Iowa, Nebraska, Texas and California.

The course covers a period of two years, during which the reading of the text is directed by a series of bulletins, issued at intervals of two weeks in booklet form and prepared by members of the institute staff. The assignment of reading each two weeks is calculated to fit the average business man's spare time.

The reading is paralleled by a series of monthly problems, which give the men who follow the course an opportunity to apply the principles studied to actual business situations.

An interesting feature in the work of the institute is its reporting service, through which subscribers to the course may secure special reports on business subjects from the specialists connected with the institute staff.

The Alexander Hamilton Institute now numbers among its subscribers about 12,000 business men connected with important corporations and financial institutions throughout the country, including such important and representative concerns as the United States Steel Corporations, American Locomotive Company, Westinghouse Electric & Mfg. Co., Burroughs Adding Machine Co., and National City Bank of New York. Over 500 men connected with the American Telephone & Telegraph Co. and its subsidiary companies are now following the course, besides a large number associated with leading Independent companies throughout the country. As the work of the institute becomes better known, this number is sure to increase rapidly, because the institute is meeting in a practical way a real need on the part of busy business men for authoritative and complete information on business subjects.

The work of the institute has appealed with special force to men connected with large corporations, whose work is necessarily specialized and does not offer the opportunity for gaining that broad grasp of business conditions and business methods that is essential in executive work in those corporations.

In the telephone field, the interest in this work has been just as great among men in the operating end as among men in the commercial and accounting departments. To such men, the Alexander Hamilton Institute offers an opportunity to acquire in a systematic way a knowledge of the basic principles that govern business conditions, and of the best methods for starting, financing and managing business enterprises. Its work is an important step in the recognition of the fact that business is no longer a trade, but a science, and its course is an important step in making the scientific study of business possible for busy men by bringing to them the best thought of specialists in the business field.

Among those telephone companies whose officers and employes are interested in the course are:

A. T. & T. Co., Cumberland, New York, Central Union, Indianapolis, Southwestern, Corn Belt (Iowa), Overland (Arizona), Los Angeles Home, Pacific, Nevada, Montana Independent, East Tennessee, New England, Iowa, Spokane Home, Bell of Pennsylvania, Nebraska, Tri-State (Texas) Pioneer, Elyria (Ohio), Grand Rapids Citizens (Mich.), Macon (Ga.), Home (La Grande, Ore.), Michigan State, Wisconsin, New State (Iowa), Mountain States, Connecticut Telephone & Electric Co. (Meriden), Independent Long Distance (Idaho), Rochester (N. Y.), Northwestern, Cleveland, Missouri & Kansas, North Dakota, Michigan Traffic Association, Topeka (Kans.), Boone County (Iowa), Overland (Phoenix, Ariz.), Southern New England, Home (Medford, Ore.), Northwestern Long Distance (Oregon), Cedar Rapids & Marion (Iowa), Arkansas Valley (Great Bend, Kans.).

The following is a brief description of the text of the Alexander Hamilton Institute course in accounts, finance and management:

1.—*Economics of Business*—A practical exposition of the science of business with illustrations from actual experience, by Edward Sherwood Meade, professor of finance in the Wharton School of Finance and Commerce of the University of Pennsylvania.

2.—*Organization, Correspondence, Transportation*—The principles underlying successful business organization and management, by Lee Galloway, professor of commerce and industry in New York University School of Commerce, Accounts and Finance; with chapters on business correspondence, by G. B. Hotchkiss, instructor in business English in New York University School of Commerce, Accounts and Finance; and chapters on transportation practice and rate-making, by James Mavor, professor of political economy in the University of Toronto.

3.—*Accounting Practice*—A comprehensive statement of accounting principles and methods, illustrated by modern forms and problems, by Leo Greendlinger, C. P. A., professor of accounting in New York University School of Commerce, Accounts and Finance.

4.—*Corporation Finance*—An exposition of the principles and methods governing the promotion, organization and management of modern corporations, by William H. Lough, professor of finance in New York University School of Commerce, Accounts and Finance.

5.—*Money and Banking*—A discussion of the laws fixing the general level of prices and wages, with descriptions of important monetary systems and of modern credit institutions in Europe and the United States, by Earl Dean Howard, professor of finance in Northwestern University School of Commerce; in collaboration with Joseph French Johnson, dean of New York University School of Commerce, Accounts and Finance.

6.—*Banking Practice and Foreign Exchange*—A description of modern banking methods and of the laws governing their organization and operation, by H. M. Jefferson, lecturer on banking in New York University School of Commerce, Accounts and Finance, secretary and treasurer of the Windsor Trust Co., New York; and a discussion of the technique and principles of international monetary operations, by Franklin Escher, lecturer on foreign exchange in New York University School of Commerce, Accounts and Finance, financial editor of Harper's Weekly.

7.—*Investment and Speculation*—A description of the modern money market and an analysis of factors determining the value of securities, by Thomas Conway, Jr., professor of finance in the Wharton School of Finance and Commerce of the University of Pennsylvania, in collaboration with Albert W. Atwood, lecturer on investments in New York University School of Commerce, Accounts and Finance.

8.—*Insurance and Real Estate*—A practical treatise on the conduct of the fire insurance business, by Edward R. Hardy, lecturer on insurance and insurance law in New York University School of Commerce, Accounts and Finance; with a practical treatise on the conduct of the real estate business, by Walter Lindner, lecturer on real property in New York University School of Commerce, Accounts and Finance, general solicitor of the Title Guarantee & Trust Co., of New York City.

9.—*Advertising, Selling, Credits*—An exposition of advertising as an art and as a business, by Lee Galloway, professor of commerce and industry in New York University School of Commerce, Accounts and Finance, in collaboration with G. Howard Harmon, vice-president of the Morse International

Advertising Agency, lecturer in New York University School of Commerce, Accounts and Finance; a discussion of selling practice, by R. S. Butler, assistant professor of business administration in the University of Wisconsin; with chapters on credits and collections, by Lee Galloway.

10.—*Accounting Systems*—A description of the accounting methods best adapted to the needs of various business institutions, by Edward P. Moxey, Jr., C. P. A., lecturer on accounting in the Wharton School of Finance and Commerce, of the University of Pennsylvania.

11.—*Auditing and Cost Accounts*—A discussion of the duties of the auditor, with practical exercises in accountants' reports, by Seymour Walton, C. P. A., professor of accounting in Northwestern University School of Commerce; with a treatise on the principles of cost accounting, giving concrete illustrations, by Stephen W. Gilman, professor of business administration in the University of Wisconsin.

12.—*Commercial Law*—A treatise for business men on the law applicable to commercial relations, with digests and cases, by Charles W. Gerstenberg, LL. B., lecturer in New York University School of Commerce, Accounts and Finance, member of the New York bar, in collaboration with Thomas W. Hughes, LL. M., professor of law in the University of Illinois.

The course and service of the institute are very interestingly discussed in a stimulating booklet on "Organized Business Knowledge" by Joseph French Johnson. Telephone men can get it without charge by addressing the Alexander Hamilton Institute, Astor Place, New York City.

Macon, Missouri, Rate Suit Compromised.

A suit of the Macon Telephone Co. against the city of Macon, Mo., has been ended by a compromise between the two parties.

The suit grew out of an ordinance passed by the city council of Macon, fixing the telephone rates to be charged so low as to be declared confiscatory. Rates of $2 for business telephones and $1 for residences were fixed as the maximum rates in Macon, where the company has been charging $2.50 and $1.50.

The suit was brought by the company to enjoin the city from enforcing these rates.

A temporary injunction has been granted and by the agreement this will be made permanent, thus making the ordinance void. The company granted certain concessions in regard to country lines.

TO INDEPENDENT AND BELL COMPANIES.

In connection with the information we are now gathering for the forthcoming edition of TELEPHONY'S Directory of the Telephone Industry, we are compiling certain additional and unusual statistics. To the end that this data may be comprehensive and as complete as possible, we ask every telephone company to mail us a copy of its latest directory. We trust all will respond promptly, and assure each that the courtesy will be appreciated. Please address it to TELEPHONY, Monadnock Block, Chicago.

How They Approached the Columbia Council.

It was shown in these pages recently the manner in which the Columbia (Mo.) Telephone Co. started a movement to collect information from telephone companies in adjoining territory in order to intelligently meet the city council in defense of its rates. This was successful in so far as obtaining reliable data was concerned.

The company then prepared a 16 page pamphlet in which it set forth its contentions. In it were shown, among other things, a willingness to submit its books and property to a close examination by experts, of which the city should employ one and the company another. The experts, then, should determine whether or not the company was making a fair return on its investment.

While declaring that the rates obtaining at other places had no real bearing on the situation in Columbia, the company offered the following comparisons as a matter of interest:

"The Columbia rates are quoted as $3 and $2. As a matter of fact out of 1,919 telephones working in this exchange only about 300 are under the $3 rate, and only 292 are on the private line residence rate of $2, leaving over 1,300, over two-thirds, working on party lines, mostly at $1.50, so that the average is only $1.746 per month.

At Sedalia, where the Bell rate is $3 and $1.75, the average is $1.95 as against the Columbia average of $1.746.

At Hannibal, where the rate is same as Columbia, the average rate per month is $1.89, and at Moberly, where th erate is $3 and $1.75, the average rate is $1.84 as against $1.746 at Columbia.

But this, even, is not the fairest test. You pay for electricity, gas and water according to the amount used, and every intelligent person knows that is the only fair way to measure the cost of telephone service. On this basis we have the following as indicating the amount received by the companies named for service, to-wit:

Moberly—1,356 telephones; receives per 100 calls.....$1.03
Boonville Home—656 telephones; receives per 100 calls .96
Boonville Bell—262 telephones; receives per 100 calls.. .88
Hannibal—2,379 telephones; receives per 100 calls.... .87
Fayette—702 telephones; receives per 100 calls..... .85
Sedalia Home—1,272 telephones; receives per 100 calls .84
Chillicothe—1,300 telephones; receives per 100 calls.... .83
Sedalia Bell—2,307 telephones; receives per 100 calls... .81
Jefferson City—1,366 telephones; receives per 100 calls. .73
Louisiana—757 telephones; receives per 100 calls.... .70
Columbia—1,919 telephones; receives per 100 calls.... .61

The following points are in Wisconsin, which has the most active and efficient commission of any state in the union, and which has absolute supervision over telephone rates.

We quote private lines only, as follows:

	Telephones.	Business.	Residence
Waukesha	1,602	$3.50	$2.00
Beloit	1,419	3.50	2.00
Marinette	1,341	3.50	2.00
Lake Geneva	918	3.50	2.00
Manitowoc	1,324	3.50	2.50

In Michigan, the plant at Calumet, 1,730 telephones, receives $4 for business and $3 for residence, and at Menominee, 913 telephones, the company receives $4 for business and $2.50 for residence.

At Warren, Pa., where there are 1,700 telephones, the rates are $3.50 and $2.50.

At San Angelo, Texas, with 1,400 telephones, the rates are $3 and $2.00.

A letter from C. L. Meyers, commercial superintendent, Cumberland Telephone & Telegraph Co., dated Nashville, Tenn., Oct. 29, 1912, says in part:

'In Louisiana and Mississippi, in an exchange with 1,000 telephones, and not more than 2,000 telephones, we charge for direct line business telephones, $4 per month each, and for direct line residence telephones, $2 per month each. In some few of these xchanges, we have party line rates of $3 for business telephones, and $1.50 per month for residence telephones. Some of the exchanges are magneto and some are central energy.

In Tennessee and Kentucky, in exchanges having from 1,000 to 1,500 telephones, we are making a rate of $3.50 per month for direct line business, and $2 per month for residence service.'

At Tiffin, Ohio, 2,125 telephones, rates are $3.50 and $2; Fhoenix, Ariz., 1,500 telephones, rates $3.50 and $2.50; Stanton, Va., 900 telephones, old style, $3 and $2.

But the question is not as to what rates are at other places. The question is, are the people of Columbia being charged more than a fair price. We have offered the only solution of that question, and shall be glad to see the question officially determined, as it can be if an honest and intelligent effort is made to do so."

The proposition is now squarely up to the city council, and the outcome will be watched with interest.